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BBC



BUNCHBACK (32K) £7.95
Beautifully detailed animation (the best we've yet seen!) as Quasimodo leaps over the ramparts dodging rocks and arrows, swinging on ropes, and avoiding the guards's spears as he attempts to rescue Esmeralda. Twelve different screens of action! This program is sold under licence from Century Electronics Ltd; we have exclusive rights to its sale for use on the BBC micro.
(For use with KEYBOARD or JOYSTICKS).
"It is an extremely good version of the arcade game ... thoroughly recommended." ... BEEBUG MAGAZINE



CRAZY PAINTER (32K) £7.95
The only full-feature version available for the BBC micro. On the first screen, you take the part of a monkey being chased by African tribesmen. If you manage to survive by painting-in all the squares, the bonus screen features the monkey trying to reach his bunch of bananas. After that, you take control of a paint-roller and each square painted-in adds to your score. But beware ... the teddy-bears are now in hot pursuit. Superb animation and sound-effects.
(For use with KEYBOARD OR JOYSTICKS).
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ALIEN DROPOUT (32K) £7.95
A novel and unusual program. Arcade-action with this enthralling multi-stage shooting game. You have to shoot the aliens out of their "boxes" before the "boxes" fill up. Once full, the aliens fly down relentlessly, exploding as they hit the ground. Hi-score, rankings, and sound effects.
(For use with KEYBOARD or JOYSTICKS).
"... this game is as good as any on the market." ... HOME COMPUTING WEEKLY.



FAIRGROUND (32K) £7.95
An exciting target-shooting game! Bonuses are scored for spelling out the word FAIRGROUND by hitting the appropriate target letters, and for shooting all the targets. Extra bullets are obtained by shooting the numerical targets, but watch out for the "smileys" who are intent on stealing your bullets. Music, sound effects, hi-score, and rankings.
●●● NEW RELEASE ●●●



CENTIPEDE (32K) £7.95
Incredible arcade-style game featuring mushrooms, snails, flies, spiders, and the centipedes of course. Excellent graphics and sound. 6 skill levels, hi-score, rankings, bonuses, and increasing difficulty as the spiders become more lively and the number of mushrooms increases.
(For use with KEYBOARD or JOYSTICKS).
"Visually this game compares well with the arcade version, being colourful and clear." ... YOUR COMPUTER



ROAD RUNNER (32K) £7.95
The only full feature machine-code version available for the BBC micro. Features include: scrolling screen, radar display, 3 pursuing cars, checkpoint flags, fuel gauge, smoke screens, 6 skill levels, rankings, increasing difficulty, and sound effects.
(For use with KEYBOARD or JOYSTICKS).
"I enjoyed the game very much ... the graphics are excellent ... movement is smooth and fast as only machine code can produce." ... HOME COMPUTING WEEKLY



FROGGER (32K) £7.95
Not just another version of Frogger ... this is the arcade-action version that you've been waiting to see. Graphically brilliant with gaping-mouthed crocodiles, diving turtles, flies, and frogs that flex their legs as they jump along. Increasing difficulty, and responsive controls.
(For use with KEYBOARD or JOYSTICKS).
"... very good indeed ... fast flicker-free graphics and a frog that really hops!" ... BEEBUG MAGAZINE

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Cover of professional software expanded

WELCOME to the third issue of *Acorn Programs*. In this issue we expand our coverage of professional software for the BBC and Electron. One page remains devoted to reviews of games software, while a second is included containing reviews of educational software.

All programs published this month have been contributed by readers of *Acorn Programs*. Programs which are submitted to us for consideration are all tested on both BBC and Electron computers.

The best programs submitted are then listed from our working office copy for publication in the magazine. All listings published are produced in this way, so that it is certain that programs will work on the machine for which they are intended, without amendments.

Please remember, when submitting programs for consideration, that they must be recorded on cassette or disc. Please state clearly for which computer your programs are intended, and enclose a stamped, addressed envelope if you would like them returned.

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Telephone, all departments: 01-359 3525. If you would like to contribute to *Acorn Programs*, please send programs on disc or cassette to *Acorn Programs*, ECC Publications, 196-200 Balls Pond Road, London N1 4AQ. We cannot undertake to return them unless a stamped, addressed envelope is enclosed. We pay a basic rate of £15 for the copyright of each program published.

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THRUSTA HIGHLY ORIGINAL AND FASCINATING NEW ARCADE GAME from a new company! Very neat graphics as your beautiful spaceship (with 'real' gravity) pushes and drops rocks to crush the revolting wobbling monsters' eggs before they hatch. Watch out for the guards! Great big smooth graphics make you feel you are really there! Takes a long time to complete each screen. Well-chosen keys but also KEMPSTON STIX. (Software Projects) £5.95

PHEENIX "This program has everything ... superb presentation, graphics and sound. Highly recommended." (HomeCompWeekly) The full arcade-action 5 screens in the best-ever Spectrum 'Phoenix'. 5 skill levels. Choice of character sets: demo mode. Crams 48K quality into 16K. KEMPSTON/AGF STIX (Megadodo) £5.50

THE TRAIN GAME "An excellent game ... original, well thought-out and full of action: absorbing and amusing." (S User) Run your own railway! Change the points to avoid crashes: watch out for hijacking by irate passengers. Full-screen graphics: 30 command keys: 2 track layouts: 7 skill levels: 14 sub-levels. Demo mode and Pause while you strike! Very catching hobby. NO STIX. (Microsphere) £5.95

3D SEIDDAB ATTACK "One of the most impressive 3D programs I've seen." (PopCompWeekly) Great 3D view through the turret of your tank as you patrol the city at night - glowing, luminous skyscrapers. Radar plan shows where you are - and where they are. 1 or 2 players and amazing flying saucers! You can see the damage they do to your tank as it happens! KEMPSTON STIX. (Hewson) £5.95

48K SPECTRUM ONLY

WHEELIE "Lovely graphics, very, very difficult and challenging. Excellent value." (Crash) Take off on your SuperDream Bike, jump buses and cars, watch out for hedgehogs as you search for the ghost rider. Will you find him? Will you beat him? Keyboard or ANY STIX. Some of the most spectacular graphics and sound we've met. Totally involving. (Microsphere) £5.95

PI-BALLED THE PIMANIAC'S Q-BERT!! Forget the horrible reggae flipside (you will eventually) and concentrate on changing the colour of the PYRAMID OF PI. Watch for the Piman and Sid the Snake, the Bouncing Balls, Col and Jas. 66 screens: transporter discs: graphic jokes. Buy it, it's wonderful! KEMPSTON STIX (Automata) £6.00

HUNTER-KILLER "AN EXCELLENT SIMULATION" (PersCompNews) Captain your own S-Class submarine: hunt down and kill the enemy sub: 18 controls (PROTEK STICK helps): dive, surface, chart your course: watch through your periscope the 3D target. Full-screen control room: chart room: periscope view. Quick-kill practice mode. Good full-screen graphics. Watch the track as your torpedoes run towards the enemy ... (Protek) £7.95

DENIS AMUSING and highly original text adventure. As Denis Thatcher, you travel up to 95 locations, seeking peace in the pub. You need to find a drink every few moves, while dropping in on the Royals, the MPs and, eventually, the Pope wearing a truss and carrying a lawnmower. It is all quite mad and lots of fun. 100% m/c. NO STIX. Written with THE QUILL (only £14.95!) The Thatcher adventure is by (Applications) £5.50

PAINTBOX "If you've been looking for a Spectrum graphics aid, this is one of the best." (PopCompWkly) We've tried it and, as they say, even a child can use it to define up to 84 User-Definable Graphics, draw all of them on-screen, save them to your programs: then there's the 2-speed hi-res drawing program and the 28-page manual and ... it is the most useful utility we've ever used. KEMPSTON/ANY CURSOR STIX. (Print&Plotter) £7.70

ALCHEMIST "Graphically, this is probably the best game I imagine have produced." (PopCompWeekly) Beautifully graphic arcade/adventure - as pretty as ATIC ATAC (£5.50) but entirely different. Amazing full-screen apparently endlessly different graphics as you search for the 4 parts of the Spell, turning yourself into a Golden Eagle from a Wizard (and back). Cast spell, fight the monsters with lightning bolts - and don't forget to eat too! Astounding. MOST STIX. (Imagine) £5.50

THE FOREST "The world's most realistic adventure game." (PersCompNews) RAVE REVIEWS all over for this fully graphic computer simulation of orienteering: you really feel you are map-making as you search for the Control Points. Draw 3D diagrams of the terrain, contour maps and feature maps. And there's 37kms of unmapped country for you to discover ... 32-page manual helps. NO STIX. (Phipps) £9.95

STONKERS "Excellent ... the best war game I've seen ... very addictive." (Crash) The best battle-game graphics yet (NOT an arcade game). Simple joystick (MOST STIX) control; but the brain is in your strategy and tactics as you deploy and supply your troops. Beautiful large and small-scale maps of the battle area: moving graphics: great sound: tickertape messages: 2 skill levels. You are on the brink of battle ... make your first decision, NOW! (Imagine) £5.50

GO TO JAIL "Excellent graphics are used to make a very impressive display indeed ... highly recommended." (ZXComp) The best computer version of the famous game. From 2 to 5 players, including the Spectrum if you wish. It's ruthless, but honest. Every original feature is faithfully reproduced and the screen display (which scrolls helpfully) is simply incredible. NO STIX. (Automata) £6.00

HALLS OF THE THINGS "The most exciting and innovative game I have seen ... no other game runs with such speed, smoothness of action and graphical quality." (ZX Comp) Explore an 8-storey maze: find treasures: avoid nasties - but this time it's all graphic and you can see yourself waving your sword! Brilliant use of 19 command keys. NO STIX. (Crystal) £7.50

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Contest champion gets development go-ahead

FOLLOWING its sponsorship of the World Chess semi-finals late last year, Acornsoft Ltd, in conjunction with the British Go Association and *A & B Computing*, sponsored a Go Tournament, in which eight BBC computers and their programmers competed for the title of Champion Computer Go player of the World.

The title was won by Bronislaw Przybyla, a freelance computer consultant from Wiltshire, who developed his Go program especially for the competition. Przybyla won £1,000 and is now working with Acornsoft to produce a commercial Go-playing



Bronislaw Przybyla, right, is congratulated by David Johnson-Davies, managing director of Acornsoft.

game, based on his winning program, which is due for launch in the near future. Acornsoft managing director David Johnson-Davies comments:

"We hope the launch of a

commercial program, which will be good enough to play a moderately strong game against a beginner will stimulate more people in the U.K. to take up Go themselves and help to popularise the game".

Nap hand eases BBC B input

ALTHOUGH the BBC micro has a conventional, typewriter-style keyboard which is easier to use than that of many other microcomputers, it can be used to its full advantage only by an exper-

ient touch typist. Users without typing experience, or young users whose fingers cannot span the requisite number of keys, can find typing-in programs an arduous process.

Microwriter has produced the Quinkey keyboard, which uses only five keys and an extra shift key in various combinations to type any of the keys on the BBC B keyboard.

As the fingers of one hand cover the keys continually it is necessary to type without looking at the keyboard so that the user is free to look at a program listing.

The Quinkey keyboard and interface pack are available, for the right hand only, from Microwriter Ltd, 31 Southampton Row, London WC1B 5HJ for £48.

Exhibitions grow in popularity

COMPUTER SHOWS and exhibitions are becoming bigger and more popular. The WHICH COMPUTER? Show, held annually at the National Exhibition Centre, Birmingham, has demand for space at the 1985 show so great that the show, which attracted 40,000 visitors in January, will be expanding into a third hall in 1985.

Prior to that are The Electron and BBC Micro User Show, at the Westminster Exhibition Centre, London from March 29 to April 1; the fifth London Computer Fair, at Central Hall, Westminster, April 19, 21 and 23; The Electron and BBC Micro User Show, at Alexandra Palace, London from July 19-

22 and at UMIST, Manchester from August 31-September 2, Alexandra Palace from October 25-28 and Westminster Exhibition Centre, London from December 6-9.

Protector wins Electron

THE ELECTRON competition in the first issue of *Acorn Programs* was won by Graham Granger of Leatherhead, Surrey for his program **Protector**, a smooth-running, arcade-action game which will run on either the Electron or BBC B computer.

Granger has been programming for some years. He bought a ZX-81 when it was launched in 1981. At Christ-

mas, 1982 he upgraded to a BBC computer but had to share time on it with other members of his family.

"Now I have an Electron", he says, "I will be able to spend more time programming and will be able to keep the computer in my bedroom."

He began writing Protector early last summer. At that time it was a simple game,

Cassette to disc service

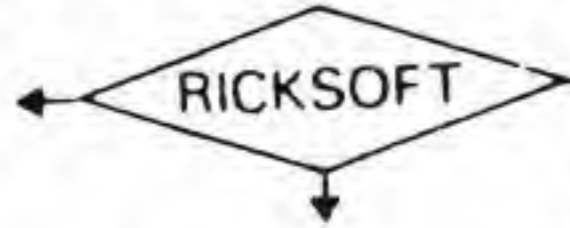
ACORN computer owners who have upgraded from cassette recorder to disc drive often find that they are left with professional cassettes they cannot transfer to disc. Options open to such owners are to buy a new disc copy of the program, or to pirate that program.

Acornsoft, the software division of Acorn Computers, has introduced a new alternative. If you have an Acornsoft cassette which is also available on disc, return the cassette to Disc Replacement Service, Acornsoft Ltd, c/o Vector Marketing, Dennington Industrial Estate, Wellingborough, Northamptonshire, enclosing half the price of a disc copy and your cassette will be replaced by a disc.

Thus the owner of Magic Garden on cassette, which costs £9.85, could return the cassette, pay an extra £5.75, and acquire the disc copy which retails normally at £11.50.

Acornsoft believes it to be the first cassette-to-disc exchange of its kind to be launched by a home software supplier. Computer owners, faced with a choice between paying £16.60 for one program or switching from disc to cassette to use their old software, may well expect it to be the last exchange offer of its kind as well.

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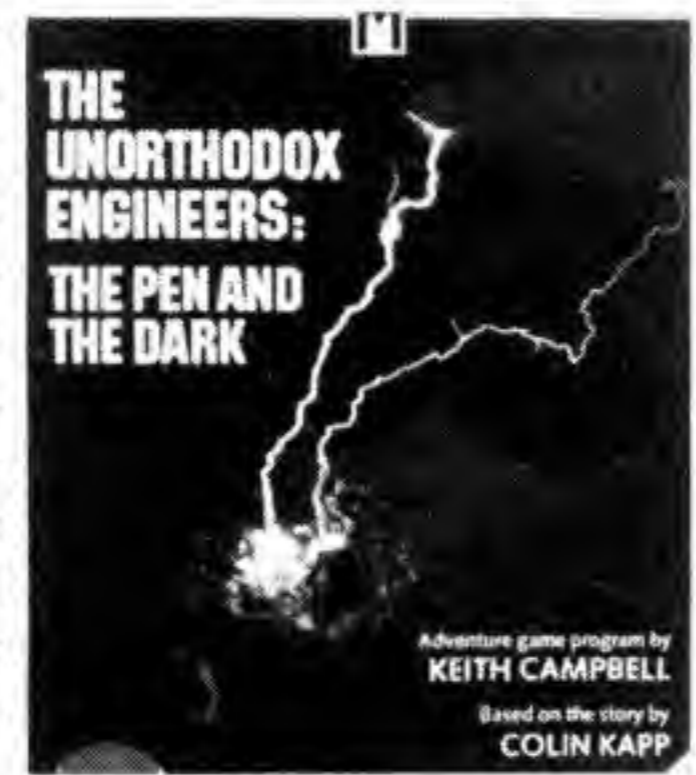
PENTILES BBC/B £6.95

REVERSI (Othello) BBC/B £6.95

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Game of the book is merely competent

THE PEN and The Dark is an adventure game, based on the story of the same title, which is provided in an accompanying book. Despite being hailed as a classic on the packaging, the story is not one of the better examples of science fiction on the market, but it is quick and easy to read and provides the player with vital clues and hints.



The game is a text adventure. A description of each location is printed at the top of the screen and so those who lose the top line of the BBC screen habitually because their television set is too small would be well-advised to take that into account before LOADING the program, as the programmer has not taken it into account and it is infuriating to attempt to play an adventure without a full description of locations.

The Pen and The Dark

is a competent adventure game, with a wide variety of locations to visit, objects to collect and problems to solve.

More exciting screen use would add to the game, as would a more exciting use of the adventure format. Adventures do not have to become word games which must be solved to move from one area to the next; the pity is that an uninspiring adventure game can give people new to adventuring that impression.

The Pen and The Dark is produced by Mosaic Publishing Ltd, 187 Upper Street, Islington, London for the BBC Model B and costs £9.95.

New ideas on old and tried theme

MICROBE — £7.95, Virgin Games — **Attack on Alpha Centauri** — £7.95, Software Invasion — and **Transistor's Revenge** — £7.95 Softspot — are all games of the if-it-moves-shoot-it variety for the BBC Model B.

Attack on Alpha Centauri uses three-dimensional graphics. The landscape looks realistically-contoured and the attackers fly forward, increasing in size as they do so.

The aim is to kill all the deadly wasps before the player loses all three lives by being stung.

Microbe is a game in the same vein. The object is to attack an alien through its bloodstream, which means blasting the descending cells, spores, aminos and ribosome before they hit the player. Transistor's Revenge does not contain such good graphics as the other two games but what it loses in that area it compensates for in originality.

The components approach along the various data lines and can be shot only along those lines.

Another complication is the pulses of energy which occasionally move very quickly along a data line and prove deadly unless they are avoided.

Worst of all worlds

PHAROAH'S TOMB is a curious amalgamation of mental puzzle, graphical game and adventure. Unfortunately it has utilised the worst of all worlds. The adventure element, meant to summon the image of a convoluting **Pharaoh's**

Tomb, instead creates the impression of a series of identical rooms with different names, not all of which are spelt correctly. The graphical element, used as you fight enemies or collect coins, is explained insufficiently and on a par with the simplest amateur games.

Movement from one chamber to another is achieved only after finding a series of numbers in a Mastermind-type fashion, or by solving an anagram. The number puzzles are very easy, while the anagrams vary from easy to impossible.

Pharaoh's Tomb is produced for the Electron by A&F Software, Unit 8, Canal Side Industrial Estate, Woodbine Street East, Rochdale, Lancashire OL16 5LB.

Adequate adventure

WRITING a successful adventure game is a complicated matter. The complexities of programming are not the only problem. The beginning of the game, at least, must be simple enough to encourage a beginner, while being complicated enough to persuade a player with experience to continue. A wide range of vocabulary should be available to the player, together with a variety of options linked by a coherent storyline.

Gideon's Gamble is an adequate adventure game; there is a vague story line, a limited vocabulary and a variety of problems to solve. It is, however, uninspiring. Once a variety of objects has been collected there is little incentive to sail away with them to continue the quest. There is also the uncomfortable feeling that the author is making fun of the player, as such

disparate objects as a wheelbarrow and a pogo-stick appear.

The whole mood generated by the game is of monotony and frustration, rather than the enthralling excitement which a good adventure game can produce.

Gideon's Gamble is produced by Superior Software, 69 Leeds Road, Bramhope Leeds and costs £7.95.

Addicted to Chuckie Egg

MOVE ROUND the farmyard, collecting as many eggs and piles of grain as possible. That involves going up and down ladders, falling down holes and avoiding hungry geese, which will eat the corn if they reach it first — or you, if you fail to evade them.

Once you have cleared one level you move to the next and movement becomes more complicated as you leap on to

grain lifts and perform complicated bouncing movements to reach the last eggs.

Chuckie Egg is a development of the Crazy Kong style of game but with sufficient features of its own to make it entertaining. The speed is slow enough to make the game possible but not so slow that you can complete the game without several hours' practice. The main difficulty

is in lining-up your figure with a ladder or floor to move. Movements must be very precise and there is nothing more frustrating than being eaten when you are within a pixel of safety.

A difficult but addictive game, Chuckie Egg is produced by A&F Software, Unit 8, Canal Side Industrial Estate, Woodbine Street East, Rochdale, Lancashire.

QUAL-SOFT "LEAGUE DIVISION ONE"

THE THINKING FAN'S SOCCER GAME

Are you a soccer supporter? How much do you **REALLY** know about the game? Can you take a side, newly promoted to Division 1, and build it into a genuine contender for the 1st Division Championship? Can you select the right tactics and team to hold Liverpool at Anfield, and the right ones to improve your goal difference at home to Wolves? Can you "read" a match well enough to see your own team's weaknesses, and then have you the skill to exploit the transfer market to cure them? In short: Would you make a successful 1st Division team manager?

WELL HERE'S YOUR CHANCE TO PROVE IT!

- * You have 5 seasons, 42 League matches/season.
- * Opposition: 21 of the 22 current 1st Division sides.
- * Each team has its own playing style and strengths.
- * Each team has home and away match tactics.
- * Define your own tactics. Tactics really work because:-
- * A true 90 min. match simulation.(3½ min. on your Beeb).
- * Graphics representation: How the match goes.
- * Realistic scoring, injuries, red and yellow cards.
- * Substitution and team adjustments for injuries.
- * Tactical substitution with repositioning of players.
- * Transfer market, real (devious) price bargaining.
- * League position, playing record updated after each match.
- * 25 to 30 hours for a game unless relegated.
- * Simple, quick SAVE/LOAD game facility.

CAN YOU GET YOUR TEAM'S NAME ON THE SILVERWARE?

QUAL-SOFT
 Dept. AP3
 18, Hazelmere Rd.,
 Stevenage,
 Herts.
 Tel: (0438) 721936

Please send me copie(s) of NAME:

LEAGUE DIVISION ONE. ADDRESS:

I enclose cheque/postal order to the

value of £ or debit

my Access/American Express

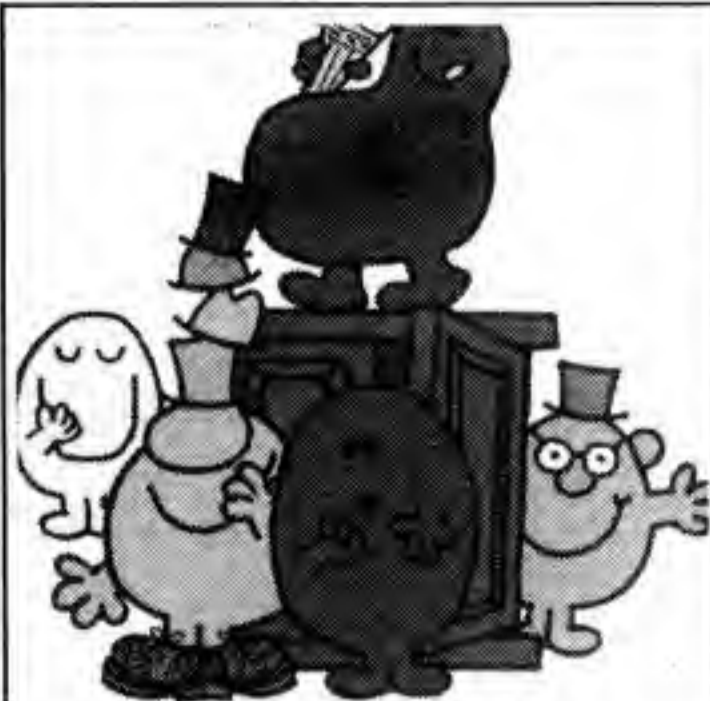
Card No., SIGNATURE

THE COMPUTER USERS CLUB

69 HADLOW ROAD,
 WELLING,
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 DA16 1AX.
 TEL: 01-311 2555

At our Hadlow Road premises we stock a complete range of accessories for the BBC micro including monitors, printers, plotters, cassette recorders and a wide selection of disc drives and other peripherals from leads to dust covers at very competitive prices. This service is provided to compliment the facilities provided by the Computer Users Club and both members and the general public are always assured of a warm welcome and helpful assistance. Obviously some of our present and hopefully future members and clients live some distance from us so we have available a mail order service. Postal/telephone, assistance, ordering and sales is available worldwide.

Our software available on both tape and disc comprises a wide selection from games to business programs. We currently have available Torch Z80 Disc Packs complete with a free comprehensive software package comprising Perfect Calc:- Spread sheet analysis. Perfect Writer and Perfect Speller:- A word processing with a spelling checker facility. Perfect Filer:- A database package. To compliment this a utilities disc, a complete package in its own right is included. The Disc Pack transforms the BBC Computer into a competitive business machine providing a total storage capacity of 800k on dual drives and the facility to run CP/M business software through the built in compatible CP/N Operating System making it a very worthwhile package at £730 + VAT. This package can be seen connected to the BBC Computer and demonstrated with the other systems currently available an open invitation without obligation is extended to all and we look forward to seeing you at our Hadlow Road premises in the very near future.



Attractive Mr Men

FIRST STEPS with the Mr Men contains four programs, aimed at four-to-eight-year-olds. They are intended to develop ideas of direction, shape matching and recognition skills, and letter recognition.

The games are very simple. Mr Forgetful's Wardrobe Game involves opening wardrobe doors, two at a time, to help Mr Forgetful locate pairs of clothing. It is the attention to detail which makes these programs into learning aids attractive to children rather than merely simple-to-write programs.

The packaging is colourful, containing pictures of the Mr Men. The keys to use are marked by a Mr Man card and the instructions are in a booklet complete with four appropriate Mr Man stories written by Roger Hargreaves. The games centre on Mr Greedy, Mr Silly and Mr Forgetful.

First Steps with the Mr Men is produced for the BBC B by Mirrorsoft, Holborn Circus, London EC1.

World Wise database lacks versatility

PRODUCERS of educational software for the BBC computer appear inordinately fond of creating a database, made up of a series of branches. Such a database lies at the heart of the Acornsoft Tree of Knowledge, the Bourne Educational Software Animal Vegetable Mineral — reviewed in the last issue — and in the Bourne Educational Software **World Wise** Program.

In **World Wise** there are two programs, one dealing with the U.K. and one with the world. Each program contains several headings, including rivers, lakes, flag and

antiquity. Two or three items are already included on the database and it is intended that, with due use of reference books, students will be able to add new items to the database, distinguishing each item from those which have appeared previously by means of questions.

Databases are useful for classification purposes, for learning to distinguish quickly between similar things, for encouraging the use of books, and for learning long strings of facts. Only one database program, however, is needed to cover those points. **World Wise** is limited because it

confines its subject to geography and does not contain a complete database.

World Wise is produced by Bourne Educational Software, Bedford Lane, Headbourne Worthy, Winchester and costs £7.80 plus VAT on cassette and £9.55 plus VAT on disc.

Learning by sight

NOTHING but praise should go to Microtrust Software for **All Fingers Go**, which is a superb example of educational software for the BBC B. The two cassettes which arrive with the package take the user stage by stage from the level of complete novice to that of confident touch typist.

On-screen are displayed a typewriter keyboard, together with finger outlines which move to the correct positions as you type. The student is first taken through an exercise by the key to be typed flashing and a finger being shown pressing it. Once that key has been pressed the program moves to the next until a line of text is printed.

That should then be copied exactly and, when it has been copied, the number of errors made is displayed, followed by the student's speed in words per minute, if appropriate. The performance can also be analysed.

The program combines the typewriter-style keyboard of the BBC B, a clear on-screen display, a carefully-graded series of lessons and regular performance analysis to produce a clear, easy and enjoyable introduction to touch-typing. It is produced by Microtrust Software, National Extension College, 18 Brooklands Avenue, Cambridge and costs £14.95.

Corrections needed

VECTORS maths tutor for the BBC B and Electron is aimed at students of O level additional mathematics or A level mathematics. In a series of 14 lessons the program deals with the skills and techniques involved with the main vector algebra requirements of those syllabi.

Once points have been explained in easy-to-understand text and diagrammatic form they are tested thoroughly in a series of multiple-choice questions. Lessons can, of course, be repeated several times until all the points in them have been fully understood.

Answering questions based on diagrams shown on-screen can be difficult for those used to working on paper but the difficulty can be overcome with practice.

When a question is answered incorrectly it would be helpful to have the correct answer and the reason for it displayed on screen, but that facility is not included in the program, meaning that either a teacher must be consulted or the lesson must be re-run to pick up a missed point.

Vectors costs £9.95 and is produced by Salamander Software, 17 Norfolk Road, Brighton, East Sussex.

Taking the Tree route

TREE OF KNOWLEDGE allows its user to build, list and save a database on the BBC computer. Building the database is achieved by entering the names of two objects to be added and providing a question, the answer to which will distinguish between them. The procedure can be repeated until a substantial database has been created.

The database can then be

used as a type of guessing game in which the computer chooses an item at random and provides clues from among the questions.

The most useful application of the program is demonstrated in the class database with the program. It is a classification of the animal kingdom, for use by biology students. Using it in that way for identification purposes could be very useful

but experimentation shows that attempting to build a database without the help of a selection of reference books can be very difficult.

The program contains several spelling mistakes in its databases and it is to be hoped that they will be removed in future copies.

Tree of Knowledge is produced by Acornsoft Ltd, 4a Market Hill, Cambridge CB2 3NJ and costs £9.20.

10 REM ** Monster Hunt .. a
game to test your Powers of obser-
vation **

20 REM ** PART 1 ... this Part
must be used to load and run Part
two of this Game **

30 REM ** © 1984 S.W. Lucas
**

40 REM ** define characters for
graphics **

50VDU23,224,62,62,0,127,107,9

3,93,73

60VDU23,225,65,8,8,8,127,93,9

3,93

70VDU23,226,73,73,93,20,20,20

,54,99

80 VDU23,227,60,36,61,107,11,

10,6,2

90 VDU23,228,0,242,250,250,25

0,22,38,16

100VDU23,229,0,1,3,15,31,63,11

5,255

110VDU23,230,0,128,192,240,248

,252,206,255

120VDU23,231,0,0,0,65,66,100,1

04,255

130VDU23,232,0,0,0,130,66,38,2

2,255

140VDU23,233,1,3,5,1,3,5,9,9

150VDU23,234,128,192,160,128,1

92,160,144,144

160VDU23,235,31,30,15,3,3,3,4,

8

170VDU23,236,248,120,248,192,1

92,192,32,16

180VDU23,237,104,100,66,65,64,

0,0,0

190 VDU23,238,22,38,66,130,2,0

,0,0

200VDU23,239,11,10,10,10,10,2,

2,14

210VDU23,240,208,80,80,80,80,6

4,64,112

220VDU23,241,255,192,191,144,1

52,148,146,145

230VDU23,242,255,3,253,9,25,41

,73,137

240VDU23,243,241,146,148,152,1

44,191,192,255

250 REM ** now choose the colo-
urs **

260VDU23,244,143,73,41,25,9,25

3,3,255

270REM ** chase character **

280 VDU19,3,0,0,0,0

290VDU23,245,255,255,255,255,2

55,255,255,255

300 REM ** monster 1 = VDU229,

230,10,8,8,235,236

310 REM ** monster 2 = VDU 231

,232,10,8,8,237,238

320 REM ** monster 3 = VDU 233

,234,10,8,8,239,240

330 REM ** monster 4 = VDU 241

,242,10,8,8,243,244

340 REM ** monster 5 = VDU224,

10,8,225,10,8,226

350 REM ** monster 6 = VDU227,

228

351 REM ** define Envelopes for
the sound effects of the main
Program **

352 ENVELOPE1,5,1,20,0,200,0,0

,126,0,0,-126,126,126

353 ENVELOPE2,2,6,0,0,255,0,0,

126,0,0,-126,126,126

354 ENVELOPE3,3,6,0,2,255,1,0,

126,0,0,-125,125,125

355 ENVELOPE4,16,16,1,1,200,0,

0,126,0,0,-126,126,126

360 MODE1

370 VDU19,0,7,0,0,0

380 VDU19,1,1,0,0,0

390 VDU19,2,4,0,0,0

400 VDU19,3,0,0,0,0

410 COLOUR1

420 PRINTTAB(12,1)"Monster Hun-

t "

430 PRINT"SPC(7)"<C> S.W. Luc

as 1984"

440 REM ** now flush the keybo-
ard buffer

450 *FX15,0

455SOUND1,4,30,150

460 COLOUR 2

470 PRINT" This is a game which

will test your Powers of obser-
vation." "There are 36 monste-

rs hiding from you. You must tr-

y and seek them out by fir-

ing your PHASER gun at two locat-

ions on the board."

480 COLOUR3

490 PRINT" When you fire your

Phaser, the monster will appear

and you must try to ide-

ntify the locations of the match-

ing monsters. "

500 COLOUR 1

510FORX=1 TO37 STEP 36:PRINTTA-

B(X,20):VDU224,10,8,225,10,8,22

6,10,8:NEXT

515 COLOUR3

520PRINT"SPC(4)"Press <Space

bar> to continue "

540 REPEAT UNTIL GET=32

550CLS:PRINTTAB(12,1)"Monster

Hunt"

560COLOUR1:PRINT" The monster

s will only remain on the scr-

een when you have found a Pair o-

f monsters which are of the s-

ame type and colour."

570COLOUR2

580PRINT"Try to hunt down and

destroy all the monsters with

the minimum number of false

moves."

600 COLOUR2

610PRINT" You must tell the c-



omputer where you want to fir-
e the PHASER by typing in the
co-ordinates of the square, eg.
E4"

611 COLOUR1

615 FOR X= 1 TO 38 STEP 4

620PRINT"TAB(X,25):VDU231,23

2,10,8,8,237,238

630 NEXTX

635 REM FLUSH KEYBOARD BUFFER

636 *FX15,0

640COLOUR3

650 PRINT"SPC(4)"Press <SPACE

BAR> to load Program"

660 REPEAT UNTIL GET=32

670 MODE2

680 FOR X= 1 TO 18 STEP 3

685 COLOUR1

690 PRINTTAB(X,3):VDU229,230,

10,8,8,235,236

695 COLOUR2

700 PRINTTAB(X,10):VDU231,232

,10,8,8,237,238

750 NEXTX

760 COLOUR3

770 PRINTTAB(4,6)"Monster Hunt

"

780 COLOUR5

790 PRINTTAB(3,8)"<C> S.W. Luc

as"

800 COLOUR7

805PRINTTAB(0,15)"Please wait

for ""Program to load"

810 REM ** define text window

**

820 VDU28,0,31,19,20

830 COLOUR6

840 REM ** DO NOT TYPE IN THE

NEXT TWO LINES UNTIL YOU HAVE FU-

LLY DEBULGED THE PROGRAM .. THEN

SAVE A COPY BEFORE RUNNING AS T-

HESE LINES DISABLE ESCAPE AND BR

Monster Hunt

A GRID is displayed on the screen and in each square of it a monster is hidden. You can display two of the monsters at a time by entering their co-ordinates. If the two you choose are identical you score a point; otherwise they will vanish. The object is to find all the pairs in as few attempts as possible.

The program is listed in two parts which should be saved on tape consecutively. The first can then be RUN with CHAIN"" and the second can then be LOADED from the first.

Monster Hunt was written for the BBC B(1.2) by Steven Lucas of Cheadle Hulme, Cheshire.

```

EAK KEYS! **
850 *FX229,1
860 *KEY 10 OLDIM RUNIM
870 REM ** Next line changes the setting of Page for DISC or E
CONET users **
880 PAGE=0E00
890 *TAPE
900 CHAIN"Prog2"
910 REM ** Make sure that you
save the second Part with the file
name in the above line ! **

```

```

10 REM ** Monster Hunt Part 2
**
20 REM ** this Part must be l
oaded and run from PART1 **
30 REM ** <C> S.W. Lucas Janu
ary 1984 **
40 REM ** when you have typed
this Program in, you should sav
e it with the file name of "Prog
2"
50 REM ** DO NOT TYPE IN NEXT
LINE UNTIL YOU HAVE FULLY DEBUG
GED THE PROGRAM
60 ON ERROR RUN
70 *FX229,1
80 *KEY 10 OLDIM RUNIM
90 E%=0:S%=0
100 MODE1
110 VDU19,0,7,0,0,0
120 VDU19,1,1,0,0,0
130 VDU19,2,4,0,0,0
140 VDU19,3,5,0,0,0
150 DIMX%(6,6)
160 VDU20,0,5,39,0
170 GCOL0,1 FOR A%=0 TO 6
180 MOVE0,A%*128:DRAW1280,A%*1
28
190 NEXTA%

```

```

200 MOVE 0,820:DRAW1280,820
210 FOR A%=0 TO 6
220 MOVEA%*190+60,0:DRAWA%*190
+60,820
230 NEXT
240 COLOUR2:PRINTTAB(12)"Monst
er Hunt""TAB(9)"<C> S.W. Lucas
1984"
250 SOUND1,4,7,50
260 GCOL0,2:VDU5:FORA%=0TO5:MO
VE140+A%*190,810:PRINTCHR$(63+A%
):NEXT:VDU4
270 VDU5:FORA%=5TO0STEP-1:MOVE
10,80+A%*128:PRINTCHR$(49+A%):MO
VE1290,80+A%*128:PRINTCHR$(49+A%
):NEXT:VDU4
280 A$=CHR$229+CHR$230+CHR$10+
CHR$8+CHR$8+CHR$235+CHR$236
290 B$=CHR$231+CHR$232+CHR$10+
CHR$8+CHR$8+CHR$237+CHR$238
300 C$=CHR$233+CHR$234+CHR$10+
CHR$8+CHR$8+CHR$239+CHR$240
310 D$=CHR$241+CHR$242+CHR$10+
CHR$8+CHR$8+CHR$243+CHR$244
320 E$=CHR$224+CHR$10+CHR$8+CH
R$225+CHR$10+CHR$8+CHR$226
330 F$=CHR$227+CHR$228
340 G$=CHR$245+CHR$245+CHR$245
+CHR$10+CHR$8+CHR$8+CHR$8+CHR$24
5+CHR$245+CHR$245+CHR$10+CHR$8+C
HR$8+CHR$8+CHR$245+CHR$245+CHR$2
45
350 FORA%=1TO18
360 FORB%=1TO2
370 REPEAT
380 C%=RND(6):D%=RND(6)
390 UNTIL X%(C%,D%)=0
400 X%(C%,D%)=A%
410 NEXT B%,A%
420 REPEAT
430 CLS:COLOUR1:PRINT"Number o
f guesses =":E%:SPL(5):"Score ="

```

```

: S%
440 COLOUR2:PRINT"Enter the f
irst coordinate "
450 REPEAT A%=GET:UNTIL(A%)>64A
ND(A%)<71)
460 PRINTCHR$(A%)
470 REPEAT B%=GET:UNTIL(B%)>48A
ND(B%)<55)
480 PRINTCHR$(B%)
490 A%=A%-64:B%=B%-48:T%=A%:U%
=B%
500 PROCPrint
510 IF X%(A%,B%)=0 THENPRINT"Y
ou have already guessed that loc
ation"/"Press <SPACE BAR> to con
tinue":E%=E%+1:REPEAT UNTIL GET
=32:GOTO430
520 PRINT"Enter the second co
ordinate "
530 REPEAT C%=GET:UNTIL(C%)>64A
ND(C%)<71)
540 PRINTCHR$(C%)
550 REPEAT D%=GET:UNTIL(D%)>48A
ND(D%)<55)
560 PRINTCHR$(D%)
570 C%=C%-64:D%=D%-48:T%=C%:U%
=D%
580 IF (A%=C% AND B%=D%) THENP
RINT"Don't cheat!"/"Press <SPACE
BAR> to continue":E%=E%+1:REPE
AT UNTIL GET=32:PROCcls:GOTO430
590 PROCPrint
600 IF X%(C%,D%)=0 THENPRINT"Y
ou have already guessed that loc
ation"/"Press <SPACE BAR> to con
tinue":E%=E%+1:REPEAT UNTIL GET
=32:VDU5:MOVEA%*190-60,B%*128-20
:GCOL0,0:PRINTG$:VDU4:GOTO430
610 *FX21,0
620 E%=E%+1
630 PRINTSPC(5)"Press <SPACE B
AR> to continue":REPEAT UNTIL GE
T=32
640 CLS:IF X%(A%,B%)<X%(C%,D%
)THENPROCcls:SOUND1,2,4,50 ELSE
S%=S%+1:X%(A%,B%)=0:X%(C%,D%)=0
:SOUND1,4,30,36
650 UNTILS%=18
660 CLS:PRINT"Well done you ha
ve found all of the monsters
with only ":E%-S%
670 PRINT"wrong moves. "/"Woul
d you like another game <Y/N>"
680 REPEAT G$=GET$
690 UNTIL G$="Y"OR$="N"
700 IF$="Y"THEN RUN ELSEMODE6:
PRINT"THANK YOU FOR PLAYING!"EN
D
710 END
720 DEFPROCPrint
730 SOUND0,3,7,20
740 VDU5:MOVE T%*190-60,U%*128
-20
750 V%=X%(T%,U%)
760 IF V%<19 THEN GCOL0,1
770 IF V%<13 THEN GCOL0,2
780 IF V%<7 THEN GCOL0,3
790 IF V%=10RV%=70RV%=13THENPR
INTA$
800 IF V%=20RV%=80RV%=14THENPR
INTB$
810 IF V%=30RV%=90RV%=15THENPR
INTC$
820 IF V%=40RV%=100RV%=16THENP
RINTD$
830 IF V%=50RV%=110RV%=17THENP
RINTE$
840 IF V%=60RV%=120RV%=18THENP
RINTF$
850 VDU4:ENDPROC
860 DEFPROCcls
870 VDU5:MOVE A%*190-60,B%*128
-20
880 GCOL0,0:PRINTG$
890 MOVE C%*190-60,D%*128-20
900 PRINTG$
910 VDU4
920 ENDPROC

```


3-D MAZE

THIS PROGRAM produces a three-dimensional maze in MODE 2 graphics. Side walls are shown in green, facing walls in red. Any maze can be set up by changing the

data in lines 20-140. In those lines 1 represents a wall, 0 represents a passage, and 8 the target. The depth and width of any new maze can be placed in the variable A% in line 170. Move

through the maze using the cursor keys. **Three-dimensional Maze** was written for the BBC and Electron by C J Locke of Winscombe, Avon.



```

10 ON ERROR GOTO 1350
20 DATA 1,1,1,1,1,1,1,1,1,1,1
,1
30 DATA 1,0,0,0,0,1,0,0,0,0,1
,1
40 DATA 1,0,1,0,1,1,0,1,1,0,0
,1
50 DATA 1,0,1,0,0,0,0,0,0,1,0
,1
60 DATA 1,0,1,0,1,1,1,1,0,1,0
,1
70 DATA 1,0,0,0,1,0,1,0,0,0,0
,1
80 DATA 1,0,1,1,1,0,1,0,1,1,0
,1

```

```

90 DATA 1,0,0,1,0,0,0,1,1,0,0
,1
100 DATA 1,0,1,1,0,1,0,1,0,1,0
,1
110 DATA 1,0,1,0,0,1,0,1,0,0,0
,1
120 DATA 1,0,1,1,1,0,0,0,0,1,0
,1
130 DATA 1,0,0,0,1,0,1,1,0,1,0
,1
140 DATA 1,1,1,1,1,1,1,1,1,1,1
,1
150 REM
160 *FX4,1
170 DIM A%(13,12)
180 FOR T=1 TO 13:FOR H=1 TO 1
2
190 READ A%(T,H)
200 NEXT H,T
210 X%=2:Y%=2:DIR=2
220 TIME=0
230 H%=4*(TANK/60)*600:H1%=0
240 MODE2
250 VDU 23:8202:0:0:0:
260 REM >>> MAIN LOOP <<<<
270 W%=600:W1%=200
280 FOR T=0 TO 4
290 H2%=H1%+TANK/60)*W1%*2)
300 ON DIR GOSUB 490,570,650,7
30
310 W%=W%-W1%:W1%=W1%-40
320 H1%=H2%
330 NEXT T
340 PRINTTAB(0,0);"TIME ";(120-
(TIME DIV 100));" "
350 IF 120-(TIME DIV 100)<=0 T
HEN GOTO 1530
360 Z=INKEY(10):IF Z<136 THEN
GOTO 340
370 IF Z=136 THEN DIR=DIR-1
380 IF Z=137 THEN DIR=DIR+1
390 IF DIR<1 THEN DIR=4

```

```

400 IF DIR>4 THEN DIR=1
410 IF Z=139 THEN GOTO 430
420 GOTO 230
430 IF DIR=1 AND A%(Y%-1,X%)<>
1 THEN Y%=Y%-1
440 IF DIR=2 AND A%(Y%,X%+1)<>
1 THEN X%=X%+1
450 IF DIR=3 AND A%(Y%+1,X%)<>
1 THEN Y%=Y%+1
460 IF DIR=4 AND A%(Y%,X%-1)<>
1 THEN X%=X%-1
470 IF A%(Y%,X%)=8 THEN GOTO 1
390
480 GOTO 230
490 Y1%=Y%-T
500 IF A%(Y1%,X%)=8 THEN GOTO
1210
510 IF A%(Y1%,X%)=1 THEN GOTO
1130
520 IF A%(Y1%,X%-1)=1 THEN PRU
C1efcl
530 IF A%(Y1%,X%+1)=1 THEN PRU
C19cl
540 IF A%(Y1%,X%-1)=0 THEN PRU
C1efop
550 IF A%(Y1%,X%+1)=0 THEN PRU
C19op
560 RETURN
570 X1%=X%+T
580 IF A%(Y%,X1%)=8 THEN GOTO
1210
590 IF A%(Y%,X1%)=1 THEN GOTO
1130
600 IF A%(Y%-1,X1%)=1 THEN PRU
C1efcl
610 IF A%(Y%+1,X1%)=1 THEN PRU
C19cl
620 IF A%(Y%-1,X1%)=0 THEN PRU
C1efop
630 IF A%(Y%+1,X1%)=0 THEN PRU
C19op
640 RETURN

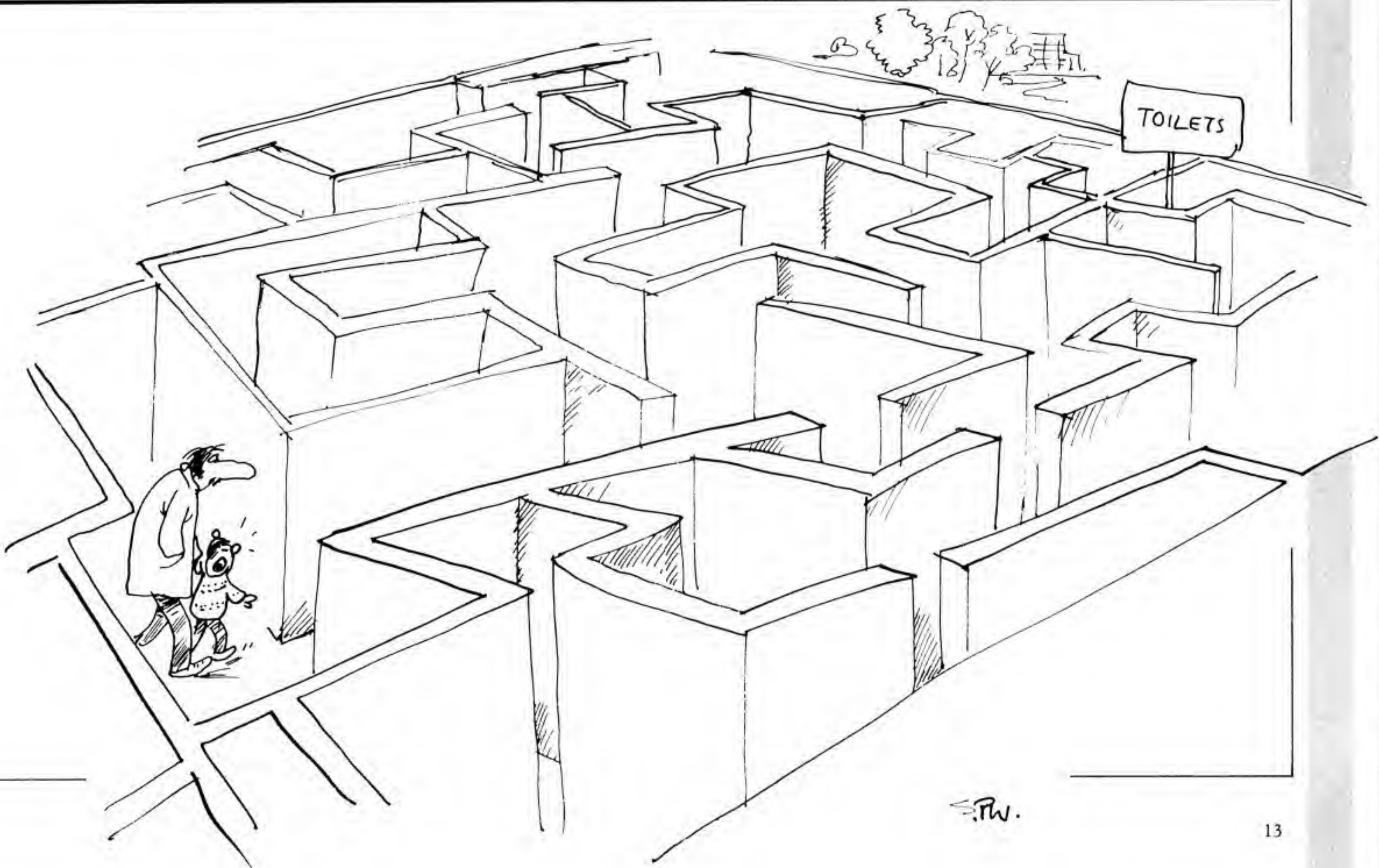
```



```

650 Y1%=Y%+T
660 IF A%(Y1%,X%)=0 THEN GOTO
1210
670 IF A%(Y1%,X%)=1 THEN GOTO
1130
680 IF A%(Y1%,X%+1)=1 THEN PRO
Clefcl
690 IF A%(Y1%,X%-1)=1 THEN PRO
Cri9cl
700 IF A%(Y1%,X%+1)=0 THEN PRO
Clefop
710 IF A%(Y1%,X%-1)=0 THEN PRO
Cri9op
720 RETURN
730 X1%=X%-T
740 IF A%(Y%,X1%)=0 THEN GOTO
1210
750 IF A%(Y%,X1%)=1 THEN GOTO
1130
760 IF A%(Y%+1,X1%)=1 THEN PRO
Clefcl
770 IF A%(Y%-1,X1%)=1 THEN PRO
Cri9cl
780 IF A%(Y%+1,X1%)=0 THEN PRO
Clefop
790 IF A%(Y%-1,X1%)=0 THEN PRO
Cri9op
800 RETURN
810 DEF PROClefcl
820 GCOL 0,2
830 MOVE 600-W%,H1%
840 DRAW (600-W%)+W1%,H2%
850 DRAW (600-W%)+W1%,H%-H2%
860 DRAW 600-W%,H%-H1%
870 DRAW 600-W%,H1%
880 ENDPROC
890 DEF PROCri9cl
900 GCOL 0,1
910 MOVE 1200-((600-W%)+W1%),H
2%
920 DRAW 1200-((600-W%)+W1%),H
%-H2%
930 DRAW 1200-((600-W%)+W1%),H
%-H1%
940 DRAW 1200-((600-W%)+W1%),H1%
950 ENDPROC
960 DEF PROClefop
970 GCOL 0,1
980 MOVE (600-W%)+W1%,H2%
990 DRAW 600-W%,H2%
1000 DRAW (600-W%)+W1%,H2%
1010 DRAW (600-W%)+W1%,H%
1020 DRAW (600-W%)+W1%,H%-H2%
1030 DRAW (600-W%)+W1%,H%
1040 ENDPROC
1050 DEF PROCri9op
1060 GCOL 0,1
1070 MOVE 1200-((600-W%)+W1%),H
2%
1080 DRAW 1200-((600-W%)+W1%),H2%
1090 DRAW 1200-((600-W%)+W1%),H%-H2%
1100 DRAW 1200-((600-W%)+W1%),H
%-H1%
1110 DRAW 1200-((600-W%)+W1%),H
2%
1120 ENDPROC
1130 REM >>> END <<<<
1140 GCOL 0,1
1150 MOVE 600-W%,H1%
1160 DRAW 1200-((600-W%)+W1%),H1%
1170 DRAW 1200-((600-W%)+W1%),H%-H1%
1180 DRAW 600-W%,H%-H1%
1190 DRAW 600-W%,H1%
1200 T=4:RETURN
1210 REMexit
1220 TIM%=TIME
1230 COL=2
1240 FOR EX%=H1% TO 396 STEP 16
1250 GCOL 0,COL
1260 COL=COL+1:IF COL=7 THEN CO
L=2
1270 MOVE (600-W%)+(EX%-H1%),EX
%
1280 DRAW (600-W%)+(EX%-H1%),H%-
EX%
1290 DRAW 1200-((600-W%)+(EX%-H
1%)),H%-EX%
1300 DRAW 1200-((600-W%)+(EX%-H
1%)),EX%
1310 DRAW (600-W%)+(EX%-H1%),EX
%
1320 Z=INKEY(0):IF Z>100 THEN G
OTO1340
1330 NEXT EX%
1340 TIME=TIM%:T=4:GOTO 330
1350 MODE7
1360 #FX4,0
1370 PRINT "ERROR "ERR;" AT LI
NE "ERL
1380 END
1390 REM >>> REACHED IT <<<
1400 ENVELOPE 1,1,2,0,-2,20,4,2
0,0,0,0,-1,80,80
1410 SOUND 1,1,100,60:SOUND 2,1
,100,60
1420 FOR COL1=0 TO 20
1430 FOR COL=1 TO 5
1440 VDU 19,COL-1,COL-1,0,19,CO
L,0,0;
1450 VDU 19,COL+1,0,0;
1460 Z=INKEY(6)
1470 NEXT COL
1480 VDU 19,5,5,0,19,6,6,0;
1490 NEXT COL1
1500 TIME=0:REPEAT UNTIL TIME=3
00
1510 CLG
1520 GOTO 1520
1530 REM >>> OUT OF TIME <<<
1540 REM >>> DURG <<<
1550 ENVELOPE 1,1,0,0,0,0,0,0,2
0,-1,0,-1,80,40
1560 READ X:IF X=999 THEN GOTO
1630
1570 READ Y
1580 SOUND 1,1,X,Y:SOUND 2,1,X,
Y
1590 GOTO 1560
1600 DATA 53,15,53,15,53,5,53,1
5
1610 DATA 65,15,61,5,61,15,53,5
,53,8
1620 DATA 45,15,53,20,999
1630 MODE 1
1640 MOVE 100,100:DRAW 100,700
1650 DRAW 300,800:DRAW 800,800
1660 DRAW 1000,700:DRAW 1000,10
0
1670 DRAW 100,100
1680 #FX9,20
1690 #FX10,20
1700 VDU 19,3,13,0;
1710 PRINT TAB(14,10);"R.I.P"
1720 PRINT TAB(7,12);"DIED OF
SUFFOCATION"
1730 COLOUR 2
1740 PRINT TAB(8,18);"ANOTHER A
TTEMPT?"
1750 A#=GET#
1760 IF A#="N" THEN END
1770 RUN

```



FW.

MATHS

THE COMPUTER throws a random number of dice. Add the numbers shown on their tops, which are displayed in the left-hand column, and their bases, which are shown in the right-hand column. The computer will then indicate the answer. An ideal program for learning and practising addition.

Maths was written for the BBC B and Electron by James Morle of Formby, Liverpool.

```

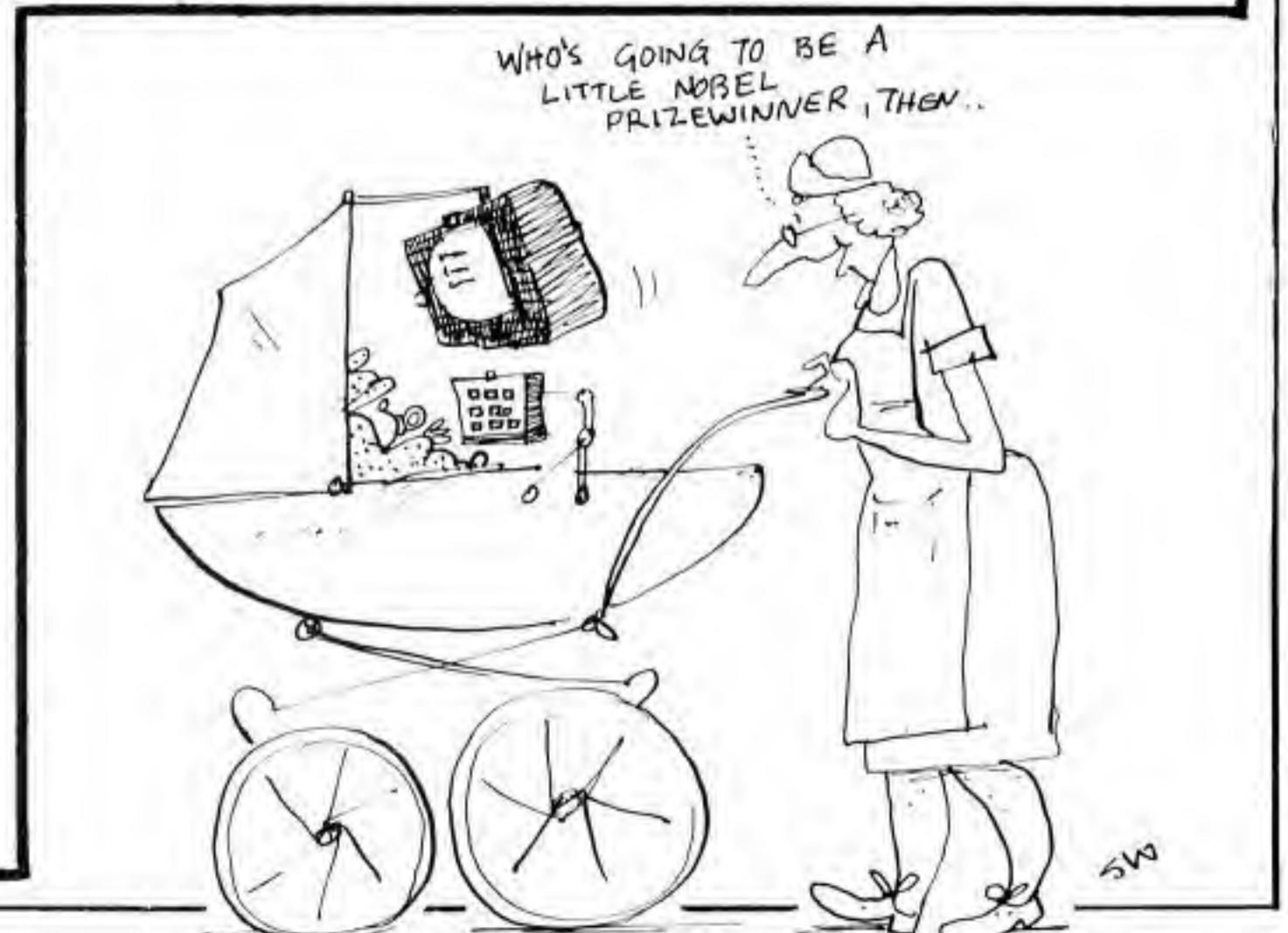
10MODE 1
20PROCdiceroll
30PROCquestions
32MODE 7
35PROCexplain
40GOTO 10
50DEF PROCdiceroll
60COLOUR 129:COLOUR 2
70B=RND(5)
80IF B=1 THEN 70
90PRINTTAB(8,0);"Bottom";TAB(
26,0);"Top"
100Y=2
110COLOUR 135:COLOUR 0
120ANS=B*7
130FOR ROLL=1 TO B
140NO=RND(6)
150PRINTTAB(9,Y)
160PROCdice(NO)
170PRINTTAB(26,Y);PROCdice(7-
NO)
180Y=Y+4
190NEXT
200ENDPROC
210DEF PROCdice(NUM)
220ON NUM GOTO 230,250,270,290
,310,330
230PRINT"  ";CHR#8;CHR#8;CHR#
8;CHR#10)
240PRINT" o ";CHR#8;CHR#8;CHR#
8;CHR#10)" ";GOTO 350
250PRINT" o ";CHR#8;CHR#8;CHR#
8;CHR#10)
260PRINT"  ";CHR#8;CHR#8;CHR#
8;CHR#10)" o";GOTO 350
270PRINT" o ";CHR#8;CHR#8;CHR#
8;CHR#10)
280PRINT" o ";CHR#8;CHR#8;CHR#
8;CHR#10)" o";GOTO 350
290PRINT" o o";CHR#8;CHR#8;CHR#
8;CHR#10)
300PRINT"  ";CHR#8;CHR#8;CHR#
8;CHR#10)" o o";GOTO 350
310PRINT" o o";CHR#8;CHR#8;CHR#
8;CHR#10)

```

```

320PRINT" o ";CHR#8;CHR#8;CHR#
8;CHR#10)" o o";GOTO 350
330PRINT" o o";CHR#8;CHR#8;CHR#
8;CHR#10)
340PRINT" o o";CHR#8;CHR#8;CHR#
8;CHR#10)" o o";GOTO 350
350ENDPROC
360DEF PROCquestions
370COLOUR 1:COLOUR 130
380PRINTTAB(0,24);"Add up numb
ers in TOP column."
390A=INKEY(2000)
400COLOUR 129:COLOUR 2
410PRINTTAB(0,25);"Add up numb
ers in the BOTTOM column."
420A=INKEY(2000)
430COLOUR 1:COLOUR 130
440PRINTTAB(0,26);"Add up your
results."
450A=INKEY(1000)
460COLOUR 129:COLOUR 2
470PRINTTAB(0,27);"Your answer
is ";ANS;"!!!"
480COLOUR 1:COLOUR 130
490PRINTTAB(0,28);"Correct (Y/
N)";IF GET#="N" THEN PRINTTAB(0,
29);"Liar!!!"
500COLOUR 129:COLOUR 2
510PRINT"Press a key to contin
ue.."
520A#=GET#
530ENDPROC
540DEF PROCexplain
550FOR B=0 TO 1
560PRINTTAB(0,B);CHR#141;CHR#1
31)"Explanation."
570NEXT
580PRINT'CHR#132;"The predict
ion is achieved by the fact ";C
HR#132;"that the top and bottom
no.s of a dice ";CHR#132;"alwa
ys add up to 7!!!!"
590PRINT'CHR#133;"Press a key
to continue..."
600A#=GET#
610ENDPROC

```



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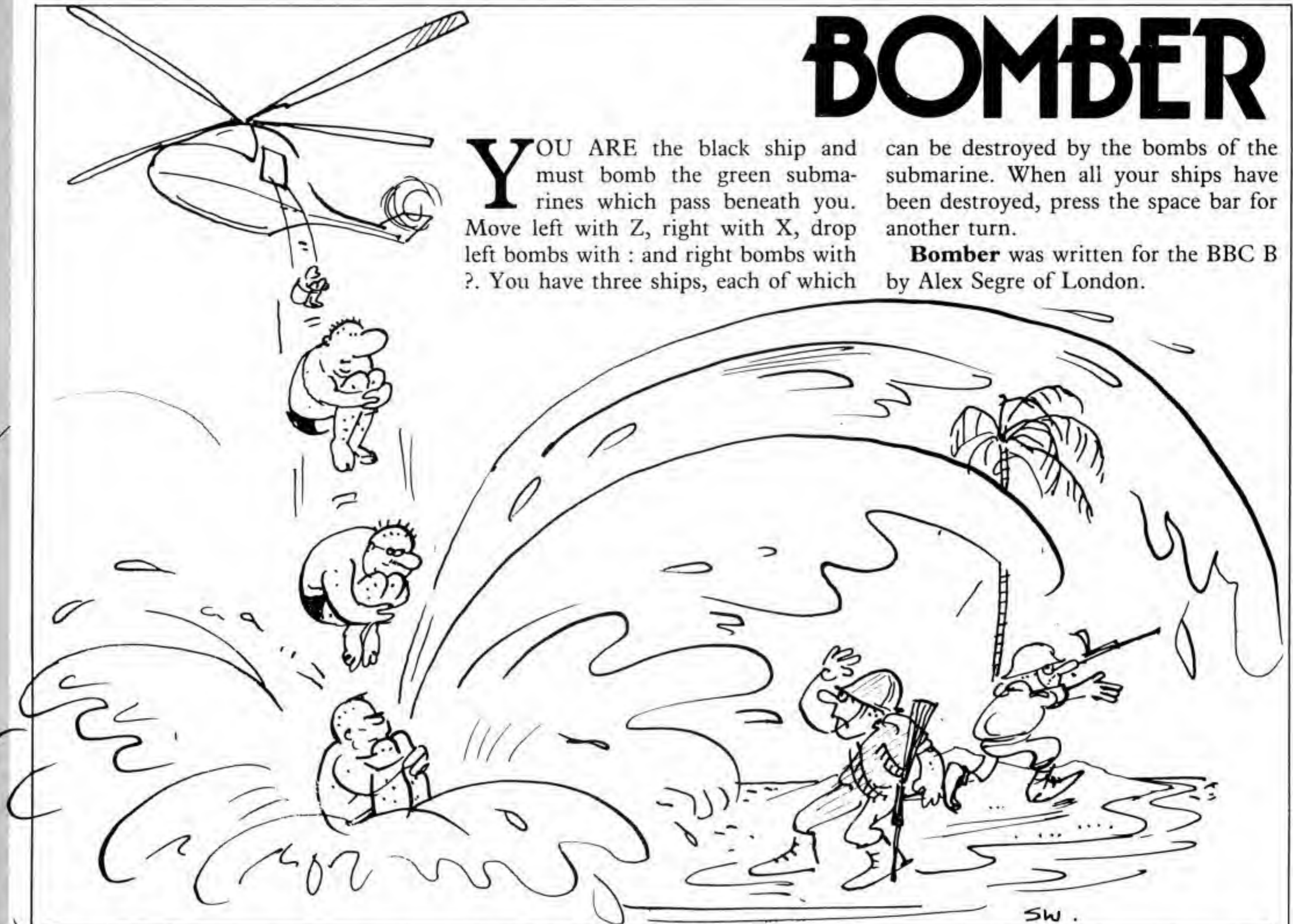
..... Post Code..... Arctic White

BOMBER

YOU ARE the black ship and must bomb the green submarines which pass beneath you. Move left with Z, right with X, drop left bombs with : and right bombs with ?. You have three ships, each of which

can be destroyed by the bombs of the submarine. When all your ships have been destroyed, press the space bar for another turn.

Bomber was written for the BBC B by Alex Segre of London.



```

10 MODE 2
20 PROCinitialise
30 COLOUR 132:CLS
40 COLOUR 3:PRINT TAB(0,0);"S
core=";score;TAB(13,0);"Lives=";
lives
50 REPEAT
60 COLOUR 3:PRINT TAB(13,0);"
Lives=";lives
70 A0=INKEY(0)
80 IF A0="Z" AND X>0 THEN X=X
-1
90 IF A0="X" AND X<13 THEN X=
X+1
100 IF A0=":" AND F=0 THEN F=1
: S=Y:V=X+1
110 IF A0="?" AND G=0 THEN G=1
: N=Y:M=X+4
120 *FX 15,1
130 COLOUR 0:PRINT TAB(X,Y);"
";SHIP;" "
140 IF F=1 THEN PROCfireF
150 IF G=1 THEN PROCfireG
160 R=RD(10):IF R=1 AND Z=0 T
HEN Z=1:REPEAT W=RD(20):UNTIL W
>12:Q=0
170 IF Z=1 THEN COLOUR 2:PRINT
TAB(Q,W);" ";SUB#
180 IF Z=1 AND RD(10)=5 THEN
PRINT TAB(E,L+1);" "U=1:E=Q+3:L
=W
190 SL=SL+1:IF SL MOD 3=1 OR S
L MOD 3=2 THEN Q=Q+1
200 IF Q>15 THEN Z=0:PRINT TAB
(Q,W);" "
210 IF U=1 THEN PROCrightback
220 UNTIL FALSE
230 DEF PROCfireF
240 PRINT TAB(V,S-1);" "
250 PRINT TAB(V,S);BOMB#
260 IF S<28 AND F=1 THEN S=S+1
ELSE F=0:PRINT TAB(V,28);" "
270 IF V>Q AND V<Q+4 AND S=W T
HEN PRINT TAB(V,S-1);" "PROCexp
plode:F=0
280 ENDPROC
290 DEF PROCfireG
300 PRINT TAB(M,N-1);" "
310 PRINT TAB(M,N);BOMB#
320 IF N<28 AND G=1 THEN N=N+1
ELSE G=0:PRINT TAB(M,28);" "
330 IF M>Q AND M<Q+4 AND N=W T
HEN PRINT TAB(V,S-1);" "PROCexp
plode:F=0
340 ENDPROC
350 DEF PROCexplode
360 SOUND&0010,2,4,50
370 Z=0
380 COLOUR 1
390 PRINT TAB(Q,W);EX#;EX#;EX#
;EX#;FOR A=0 TO 200:NEXT A:PRINT
TAB(Q,W);" "
400 Q=0:W=0
410 score=score+10
420 COLOUR 3:PRINT TAB(0,0);"S
core=";score
430 ENDPROC
440 DEF PROCrightback
450 COLOUR 5
460 PRINT TAB(E,L+1);" "
470 PRINT TAB(E,L);SBOMB#
480 L=L-1
490 IF L=9 THEN U=0:IF E>X AND
E<X+5 THEN PROCdead
500 IF L=9 THEN PRINT TAB(E,L+
1);" "
510 ENDPROC
520 DEF PROCdead
530 lives=lives-1
540 COLOUR 3:PRINT TAB(13,0);"
Lives=";lives
550 SOUND &0014,-15,100,30
560 COLOUR 1:PRINT TAB(X,Y);EX
#;EX#;EX#;EX#;EX#;FOR A=0 TO 270
0:NEXT:PRINT TAB(X,Y);" "
570 X=0
580 IF lives=0 THEN PROCfinish
590 ENDPROC
600 DEF PROCfinish
610 REPEAT UNTIL GET=32
620 RUN
630 DEF PROCinitialise
640 VDU 23;0202;0;0;0;
650 *FX 11,0
660 *FX 12,6
670 X=0:Y=10:F=0:G=F:Z=F:Q=F:W
=F:U=F:E=F:L=F:SL=F:lives=3:scor
e=F
680 ENVELOPE 2,10,0,0,0,10,10,
10,126,-5,-5,-5,110,0
690 VDU 23,240,0,0,0,159,191,2
55,191,159,23,241,0,31,31,255,25
5,255,255,255,23,242,128,128,128
,252,246,254,252,248
700 VDU 23,244,0,0,0,126,14,25
5,63,31,23,245,1,1,1,127,127,255
,255,255,23,246,4,4,4,254,254,25
5,255,255,23,247,2,4,8,112,112,2
55,252,248
710 VDU 23,243,195,231,126,60,
60,60,60,24
720 VDU 23,248,24,60,60,60,60,
126,231,195
730 VDU 23,249,84,10,188,29,18
0,46,69,40
740 SHIP#="CHR(244)+CHR(245)+
CHR(246)+CHR(247)
750 SUB#="CHR(240)+CHR(241)+C
HR(242)
760 BOMB#="CHR(243)
770 SBOMB#="CHR(248)
780 EX#="CHR(249)
790 ENDPROC

```




DRIVER

```

10 REM By Alex Segre
20 high=0
30 MODE 2
40 PROCinitialise
50 REPEAT
60 score=score+1
70 PRINT TAB(X,Y);CHR$(240)
80 move#=INKEY$(0)
90 car=RND(19)
100 R=RND(2);IF R=1 THEN COLOUR
R 2;PRINT TAB(car,2);CHR$(241)
110 PRINT TAB(X,Y);" "
120 VDU 30,11
130 IF move#="," AND X>1 THEN
X=X-1;SOUND 0,-15,50,1
140 IF move#="." AND X<19 THEN
X=X+1;SOUND 0,-15,50,1
150 COLOUR 4
160 PRINT TAB(X,Y);CHR$(240)
170 UNTIL POINT(X*65+16,282)=2
180 COLOUR 1

```

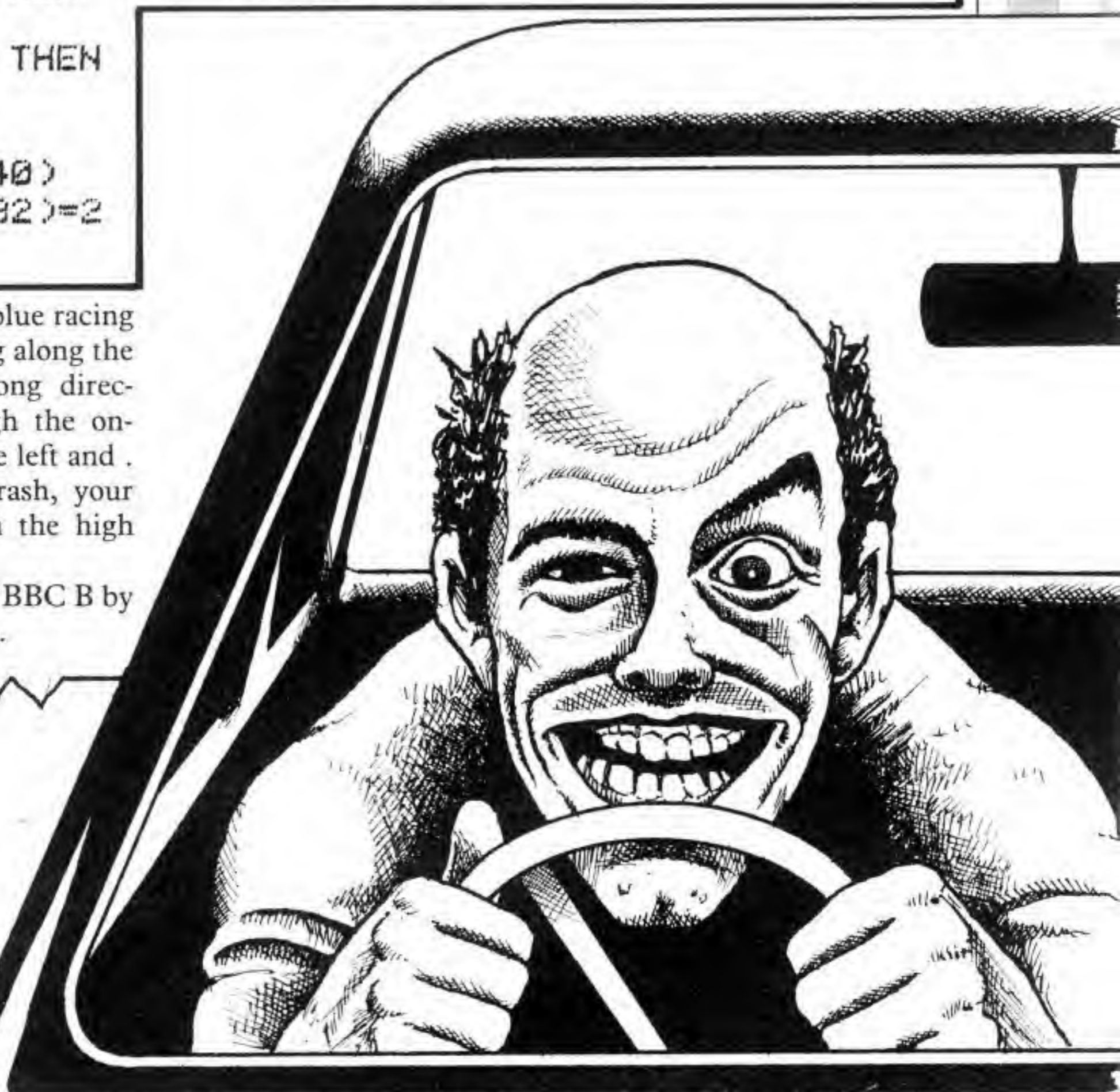
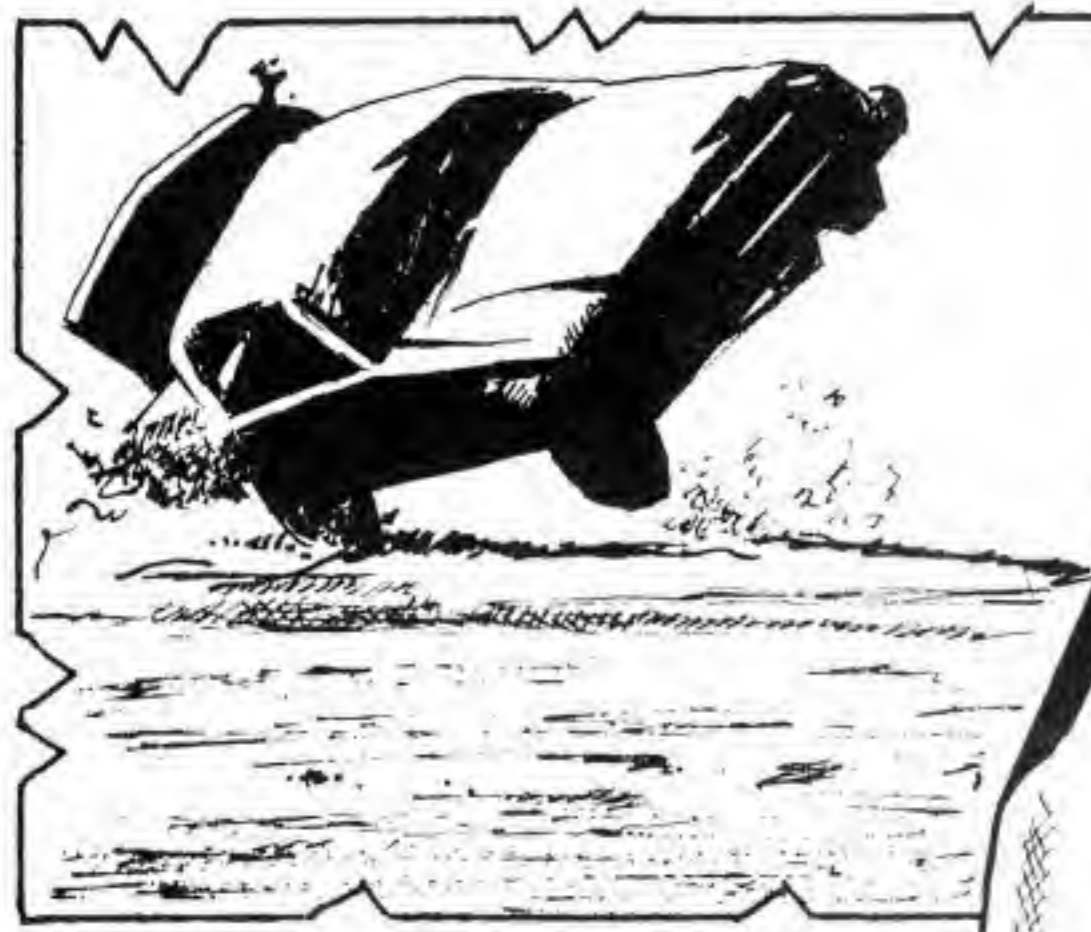
```

190 PRINT TAB(X,Y);CHR$(242)
200 SOUND 0,2,4,50
210 IF score>high THEN high=score
220 COLOUR 3
230 PRINT TAB(7,13);"SCORE ";score
240 PRINT TAB(7,15);"HIGH ";high
250 FOR T=0 TO 3000:NEXT
260 *FX 12,0
270 *FX 15,0
280 G=GET
290 GOTO 30
300 DEF PROCinitialise
310 VDU 23;8202;0;0;0;
320 ENVELOPE 2,10,0,0,0,10,10,
10,126,-5,-5,-5,110,0
330 VDU 23,240,8,93,127,93,28,
93,127,85
340 VDU 23,241,85,127,93,28,93,
127,93,8
350 VDU 23,242,84,10,188,29,11,
6,46,69,40
360 *FX 11,8
370 *FX 12,6
380 X=12
390 Y=24
400 score=-21
410 ENDPROC

```

YOU CONTROL the blue racing car, which is travelling along the motorway in the wrong direction. Steer your way through the oncoming traffic using , to move left and . to move right. When you crash, your score will be displayed with the high score below it.

Driver was written for the BBC B by Alex Segre of North London.



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... the continued thunder of the hissing ground missiles had long now dealoned him - unless he had some of those bombers down, the fleet in the small stretch of water was a sitting duck...
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... the movement of the saloon-bar door was all the warning he needed! At the speed of light his hand moved toward his holster, while a sixth sense warned him of the upper floor window...
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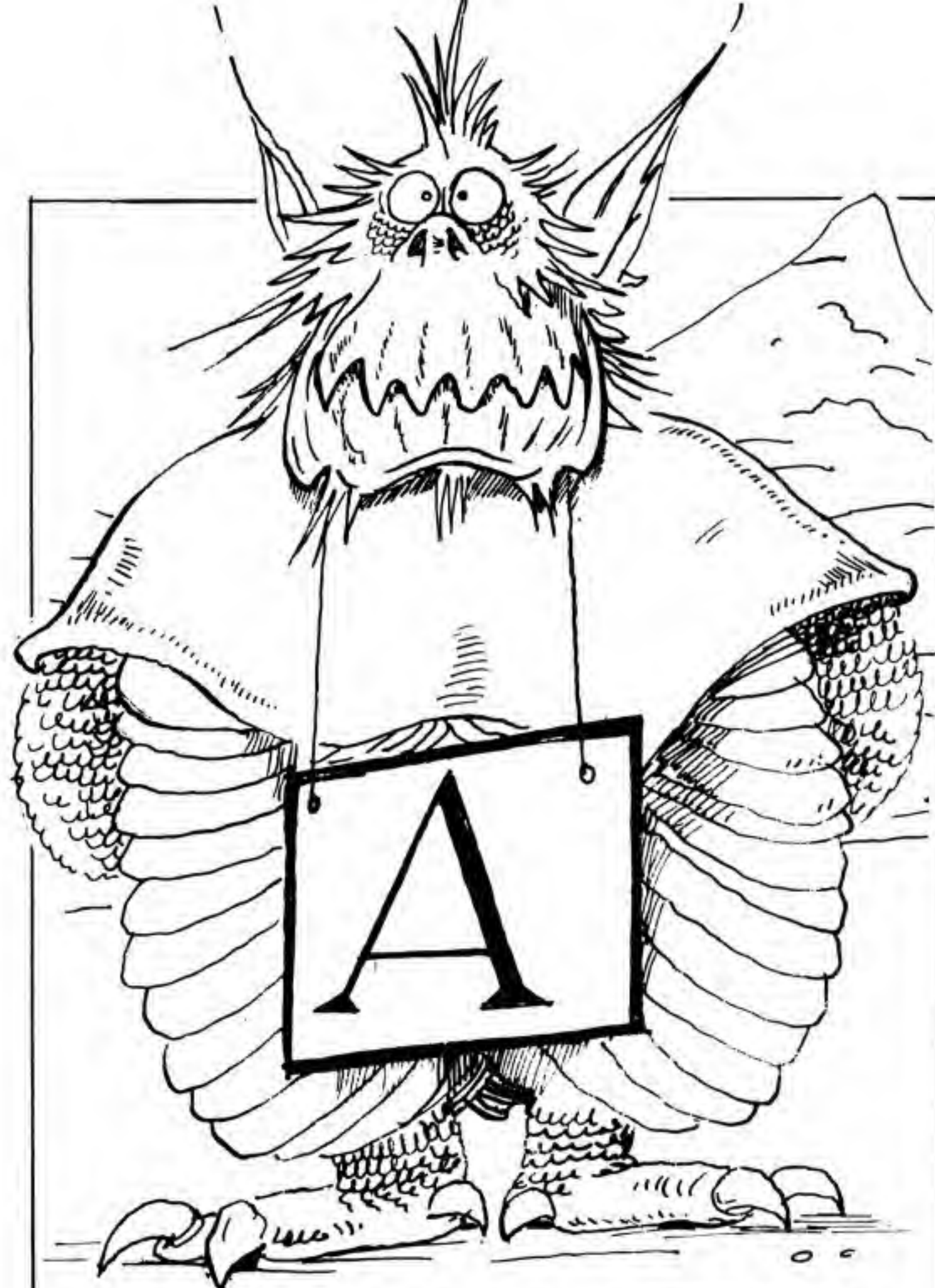
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DEFINER

THIS ROUTINE can be used to work out user-defined characters. An eight by eight grid is displayed on the screen and a cursor can be moved round it using Q,W,U and 8. Squares can be filled by pressing Z and cleared by pressing X. Once the character is complete, press TAB to find the decimal values of each line. They can then be typed after VDU 23,224 and the character will then be displayed by pressing VDU 224.

Definer was written for the BBC computer by Edmund Quek of Mitcham, Surrey.

```

10 REM CHARACTER DEFINER
20 *TV255
30 MODE1
40 *FX12,255
50 VDU23;8202;0;0;0;
60 VDU19,1,3,0;0;0;
70 VDU19,2,2,0;0;0;
80 VDU19,3,5,0;0;0;
90 GOTO210
100 DEFPROCGRID
110 GCOL0,2:MOVE0,1000
120 DRAW000,1000:DRAW000,200
130 DRAW0,200:DRAW0,1000
140 FORZ%=1TO7
150 MOVE(Z%*100),1000
160 DRAWZ%*100,200

```

```

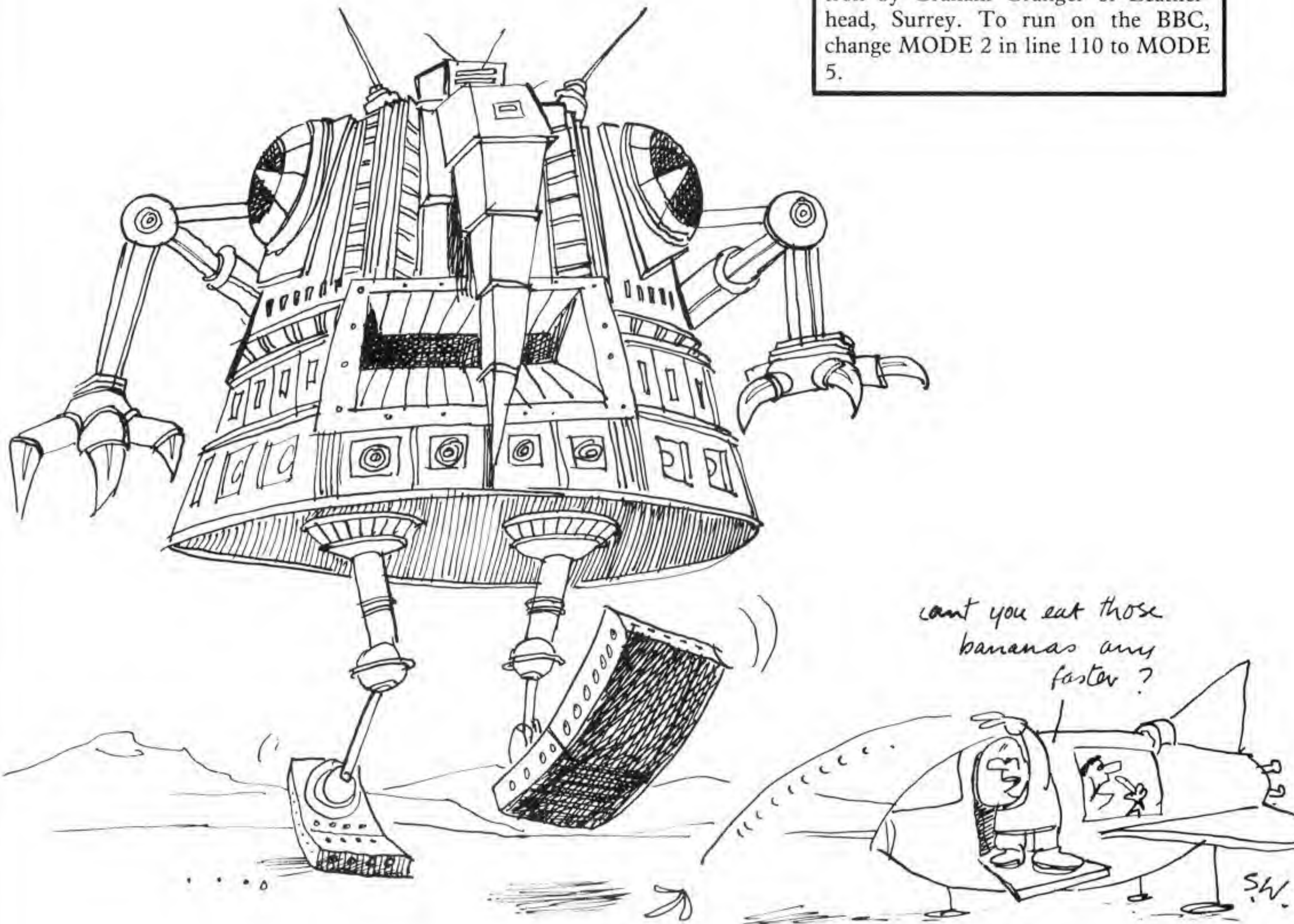
170 MOVE0,(200+Z%*100)
180 DRAW000,(200+Z%*100)
190 NEXTZ%
200 ENDPROC
210 PROCGRID
220 COLOUR1
230 PRINTTAB(0,26)"Use Q,W,8 a
nd U to position cross over des
ired area. Press 'z' to fill in
and 'x' to clear square.Press T
AB to finish."
240 H=0:V=1000
250 A#=INKEY$(0)
260 IFA#="Q"ANDH>0THENH=H-100
270 IFA#="W"ANDH<700THENH=H+10
0
280 IFA#="8"ANDV<1000THENV=V+1
00
290 IFA#="U"ANDV>300THENV=V-10
0
300 IFA#="Z"THENPROCFILL
310 IFA#="X"THENPROCUNFILL
320 IFINKEY(-97)THENPROCADD
330 VDU5:GCOL4,3
340 MOVEH,V:DRAWH+100,V-100
350 MOVEH,V-100:DRAWH+100,V
360 MOVEH,V:DRAWH+100,V-100
370 MOVEH,V-100:DRAWH+100,V
380 GOTO250
390 DEFPROCFILL:GCOL0,1
400 MOVEH,V:MOVEH+100,V
410 PLOT85,H+100,V-100
420 MOVEH,V-100:PLOT85,H,V
430 PROCGRID
440 SOUND1,-10,100,1
450 ENDPROC
460 DEFPROCUNFILL:GCOL0,0
470 MOVEH,V:MOVEH+100,V
480 PLOT85,H+100,V-100
490 MOVEH,V-100:PLOT85,H,V
500 SOUND1,-10,200,1
510 PROCGRID
520 ENDPROC
530 DEFPROCADD
540 FORZ%=8TO1STEP-1
550 BIT=0:BIN=128
560 FORY%=1TO8
570 COL%=POINT(Y%*100-50,200+Z
%*100-50)
580 IFCOL%=1THENBIT=BIT+BIN
590 BIN=BIN/2
600 NEXTY%
610 MOVE600,200+Z%*100-50:PRIN
TBIT
620 NEXTZ%
630 VDU4
640 PRINTTAB(0,30)"Press a key
to define another character"
650 *FX21,0
660 N=GET:RUN

```


Protector

PROTECT the mothership from the dangerous Walkers, Bouncers and Droppers as well as the harmless Treader. Move left with Z, right with X, fire with RETURN and move upwards with SHIFT — gravity will pull you down again. Eight small mines are scattered round the screen. Seven of them are harmless but one is deadly and can disable your gunship if you shoot it in error.

Protector was written for the Electron by Graham Granger of Leatherhead, Surrey. To run on the BBC, change MODE 2 in line 110 to MODE 5.



editor

```

20VDU23,240,1,7,160,174,1,1,0
,0,23,242,244,20,2,1,102,146,146
,36,23,243,244,20,2,1,102,146,16
4,10,23,240,5,31,119,191,119,11,
112,0,23,241,5,31,123,191,119,11
,16,112
30VDU23,244,0,96,0,0,0,0,0,0,
23,245,0,24,0,0,0,0,0,23,246,0
,6,0,0,0,0,0
40VDU23,249,219,60,106,255,15
3,66,230,7,23,250,90,189,86,255,
153,66,103,224,23,237,0,0,20,0,0
,0,0,0,23,238,0,0,40,0,0,0,0,0
50VDU23,251,126,159,255,60,24
,36,90,66,23,252,126,231,255,60,
24,36,66,153,23,253,126,249,255,
60,24,165,90,24
60VDU 23,230,126,219,231,60,2
19,189,60,219,23,232,129,129,219
,126,60,24,36,36,23,231,0,0,24,6
0,126,219,165,165,23,234,0,0,12,
0,12,29,31,12,23,235,24,60,126,2
55,90,189,231,165,23,236,0,0,48,
0,48,184,248,48
70VDU23,225,102,195,219,126,6
0,24,0,0
80VDU23,228,90,102,189,102,0,
0,0,0,23,229,0,24,0,0,0,0,0,0
90VDU23,224,146,84,40,85,87,4
0,84,146,23,226,24,36,90,189,189
,90,36,24,23,227,73,42,20,170,23
4,20,42,73
100VDU23,233,0,24,36,66,66,36,
24,0,23,254,0,0,16,40,40,16,0,0,
23,255,0,0,8,20,20,0,0,0
110MODE 2:VDU23;8202;0;0;0;
120HIGH=0
130HI#="CRG"
140DIM LX(0):DIM LY(0)
150PROC_BACKGROUND
160LHI%=0
170OLX=1:OLY=1
180EPX=1:EPY=1
190HHH=TRUE
200SHIPY%=200:AAA=1
210ODY%=1:ODX%=1
220DRUP=0:FIT=0
230X%=0:Y%=3000:M#="R":Y#="U":
DX%=500:DY%=1100:SPX=100:KX=0:SZ
=0:AX%=-300:AY%=RND(700)+200:P%=
0:Q%=0:F%=FALSE:EX=70:GX=1:DX=24
9:ODX%=0:U%=251:OU%=0:W%=3:J%=1:A
X%=25:SHIPX%=-128:TT%=FALSE:FFX=F
ALSE
240BX%=RND(500)+300:CBX%=BX%-B
Y%=700-LBY%=BY%-CAT#-0
250PROC_SETUP
260ENVELOPE1,2,-2,-2,-1,10,10,
50,126,-4,-4,-4,126,0
270ENVELOPE2,1,1,-125,189,40,2
35,77,124,17,-11,-53,-105,125
280ENVELOPE3,0,-1,-1,-1,255,25
5,255,120,0,0,-120,120,120
290ENVELOPE4,1,0,0,0,1,1,1,0,-
1,-2,-0,126,100
300FIT#-RND(0)
310FURN#-1T00
320LIX#-RND(1000)+100+LIY#-RND
(450-(CY%+100))+LY%+100
330MOVEGIX%,GIY%:COL0,3:VDU22

```

```

8:COL0,1:MOVEGIM%,GIY%:VDU229
340IFFIT#-RND(MIX%-LIY%-MIY%-LIY
%
350NEXT
360PROC_LMOTHER:PROC_SHIP:SET
UP:PROC_DRAW:CHR#(0):CHR#(0)
370REM*****
****
380REPEAT
390PROC_LMSHIP
400PROC_LMINE
410PROC_LAZ
420PROC_BOUNCE
430IFDRUP=0:PROC_ALIEN ELSE:PRO
C_LDRUP
440PROC_SNAIL
450IFINKEY(-74):PROC_CHECK
460IFLY(1)<-500:EX=EX+2:W%=W%+
1:PROC_SETUP
470IFRND(50)>1:PROC_DEL
480UNTIL0
490REM*****
****
500DEF PROC_CHECK
510SOUND(1,1,105,5)
520M#-MHI#*2+0:Y#-Y#*2+0
530COL3,5
540MOVEX%,Y%:DRAWX%,Y%+300
550J%=0
560IFM%<DX%+64:NDY%>DX%:NDY%+
60:NDY%:NDY%<DY%:VDU19,128,1,0,0,0
+50:NDX%+4:RND(4)+3,10:SPX=SPX+5:
PROC_LLEAP:DX%=500:DX%=1100:PROC
_LSCORE(200):VDU20:DRUP=0
570IFM%<AX%+192:ANDY%>AX%:ANDY%+
300:AY%:ANDY%<AY%:VDU19,128,1,0,0,0
+60:PROC_LSCORE(100):PROC_WIPE(6,AX
%,AY%,CHR#(0)+9)+CHR#(249)+CHR#(0)
-7:0:AY%+1200:VDU20
580IFM%<BX%+64:NDY%>BX%:NDY%+6
00:BY%:NDY%<BY%:VDU19,128,1,0,0,0
+60:PROC_LSCORE(50):PROC_WIPE(7,BX%,
BY%,CHR#(0)):COL3,1:MOVEBX%,BY%:
VDU 0,2-7:EX%=RND(600)+300:BY%=70
0:F%=FALSE:VDU20
590FURN#-2T0W%
600IFLY(N%)>0:GOTO620
610IFM%<LX(N%)+64:NDY%>LX(N%):N
DY%+300:LY(N%):NDY%<LY(N%):VDU19
,128,1,0,0,0:PROC_LSCORE(30):PROC
_WIPE(4,LX(N%),LY(N%),CHR#(0)):M
OVELX(N%),LY(N%):COL3,7:VDU 0,0%
-12:LX(N%)+0:LY(N%)+0:VDU20
620NEXT
630GCOL3,5:MOVEX%,Y%:DRAWX%,Y%
+300
640ENDPROC
650REM*****
****
660DEF PROC_ALIEN
670IFRND(SPX)=1:DRUP=1:FIT=1:CO
L3,5:MOVEDX%,DY%:PRINTCHR#(0)+
18)
680IFDRUP=1:PROC_DRUP:ENDPROC
690ODX%=DX%:ODY%=DY%
700GCOL3,5:MOVEDX%,DY%:VDU 0%-
18
710DX%=BX%

```

```

720DY%=DY%-4
730MOVEDX%,DY%:VDU 0%-18
740IFDY%<-32:DY%=1364
750ENDPROC
760REM*****
****
770DEF PROC_LAND
780GCOL0,1:LY%=120
790FURN#-0T01200STEP8
800LY%=LY%+RND(20)-10.5
810IFLY%<30:LY%=LY%+11
820IFLY%>300:LY%=LY%-11
830IFN%=640:GY%=LY%
840GCOL0,7
850MOVEV%,0
860DRAWN%,LY%
870GCOL0,1
880MOVEV%,0:DRAWN%,LY%-10
890NEXT
900ENDPROC
910REM*****
****
920DEF PROC_END
930T=70
940LX=544-LY=LY%+100:LY=LY%+10
0:RX=672
950REPEAT
960GCOL3,5:MOVEVX%,LY:VDU224:MO
VE608,CY:VDU226:MOVEVX%,LY:VDU227
970GCOL3,3:MOVE608,CY:VDU203:MO
VEVX%,LY:VDU254:MOVEVX%,LY:VDU255
980LX=LX-T:LY=LY+T:RX=RX+T:CY=
CY+90
990GCOL3,5:MOVEVX%,LY:VDU224:MO
VE608,CY:VDU226:MOVEVX%,LY:VDU227
1000GCOL3,3:MOVE608,CY:VDU203:MO
VEVX%,LY:VDU254:MOVEVX%,LY:VDU255
1010FURN#-0T0100:NEXT
1020UNTIL:CY>1050
1030VDU19,128,15,0,0,0,
1040FORM#-15T0-4STEP.5:SOUND0,M
,100+RND(3),10:NEXT:VDU20
1050VDU4:PRINTTAB(0,0):FURN#-0T0
32:VDU11:FORG#-0T050:NEXT:NEXT
1060GOTO150
1070REM*****
****
1080DEF PROC_SNAIL
1090IFAX%<-200:ENDPROC
1100GCOL3,6:MOVEVX%,AY%:VDU 0%-
9,248,0,0%-7
1110AX%=AX%-110
1120MOVEVX%,AY%:VDU 0%-9,248,0%-
7
1130ENDPROC
1140REM*****
****
1150DEF PROC_BOUNCE
1160CBX%=BX%:CBY%=BY%
1170OU%=U%
1180U%=U%+1
1190IFU%=254:U%=251
1200GCOL3,7:MOVEBX%,BY%:VDU 0,0%
1210BX%=BX%+32-P%
1220BY%=BY%+64-Q%
1230IFBX%<200:P%=0
1240IFBY%<GY%+100:Q%=0
1250IFBX%>1000:P%=64
1260IFBY%>800:Q%=128
1270MOVEBX%,BY%:VDU 0,0%
1280GCOL3,1:MOVECBX%,CBY%:VDU 0

```



```

UX=-7:MOVEBX%,BY%:VDU UX=-7
1290IFFX% $\neq$ FALSE GCOL3,7:MOVECBX%
,CBY%:VDU OUX%:GCOL3,1:MOVECBX%,C
BY%:VDU OUX%=-7
1300FX% $\neq$ TRUE
1310IFBY% $\gt$ LY%+68ANDBY% $\lt$ LY%+132A
NDBX% $\gt$ 480ANDBX% $\lt$ 736 PROCEND
1320ENDPROC
1330REM*****
****
1340DEF PROC_L_SHIP
1350IFCATX%=1ENDPROC
1360GCOL3,2:MOVESHIPX% $\neq$ -64,SHIPY
%:VDU234,235,236
1370IFINKEY(-98)SHIPX%=SHIPX%-5
1
1380IFINKEY(-67)SHIPX%=SHIPX%+5
1
1390IFSHIPY% $\lt$ GY%+182 AAA=0 ELSE
AAA=-32
1400IFINKEY(-1)HHH=FALSE
1410IFHHH=FALSE AAA=0
1420IFHHH=FALSE AND SHIPY% $\lt$ 500
AAA=32
1430SHIPY%=SHIPY%+AAA
1440MOVESHIPX% $\neq$ -64,SHIPY%:VDU234
,235,236
1450IFHHH=FALSE SOUND0,1,105,1

1460HHH=TRUE
1470ENDPROC
1480REM*****
****
1490DEF PROC_DEC
1500IFAMX% $\lt$ -200 AMX%=1200:AYX%=RND
(550)+300:SOUND2,2,105,120
1510ENDPROC
1520REM*****
****
1530DEF PROC_LAZ
1540OX%=0%
1550OX%=OX%+1
1560IFDX%=251 DX%=249
1570FURN%=1TOWX%
1580IFNX%=1 GOTO1600
1590IFLY(NX%)=0 GOTO1690
1600GCOL3,4:MOVELX(NX%),LY(NX%):V
DU DX%
1610GCOL3,7:MOVELX(NX%),LY(NX%):V
DU DX%-12
1620OLX=LX(NX%):OLY=LY(NX%)
1630LX(NX%)=LX(NX%)+RND(50)-26
1640LY(NX%)=LY(NX%)-RND(6X%)
1650IFLX(NX%) $\lt$ 640 LX(NX%)=LX(NX%)+
32ELSE LX(NX%)=LX(NX%)-32
1660IFNX%=1 GOTO1690
1670IFLY(NX%) $\gt$ GY%+68ANDLY(NX%) $\lt$ GY
%+132ANDLX(NX%) $\gt$ 480ANDLX(NX%) $\lt$ 736
PROCEND
1680GCOL3,4:MOVELX(NX%),LY(NX%):V
DU ODX%:GCOL3,7:MOVELX(NX%),LY(NX%)
:VDU ODX%-12
1690NEXT:ENDPROC
1700REM*****
****
1710DEF PROC_SETUP
1720IFW%=7 W%=3
1730FURN%=1TOWX%:LX(NX%)=RND(1200
):LY(NX%)=1100:NEXT
1740ENDPROC
1750REM*****
****
1760DEF PROC_SCORE(NY%)
1770GCOL0,0
1780MOVE80,957:PRINT;S%
1790MOVE73,950:PRINT;S%
1800S%=S%+NY%
1810GCOL0,7:MOVE80,957:PRINT;S%

1820GCOL0,1:MOVE73,950:PRINT;S%

1830ENDPROC
1840REM*****
****
1850DEF PROC_SHIP_SETUP
1860REPEAT
1870GCOL3,2:MOVESHIPX% $\neq$ -64,GY%+1
50:VDU234,235,236
1880SHIPX%=SHIPX%+32
1890MOVESHIPX% $\neq$ -64,LY%+150:VDU23
4,235,236

```

```

1900FURN=0T0100:NEXT
1910UNTIL SHIPY% $\gt$ 600
1920SHIPY%=GY%+150
1930ENDPROC
1940REM*****
****
1950DEF PROC_L_MOTHER
1960GCOL3,3:MOVE544,LY%+100:VDU
254,255,256
1970GCOL3,5:MOVE544,LY%+100:VDU
224,226,227:ENDPROC
1980REM*****
****
1990DEF PROC_BACKGROUND
2000CLS
2010VDU4
2020IFSX% $\gt$ HIGH COLOUR15:PRINTTAB
(2,10)"-NEW HIGH SCORE-" :COLOUR0
ELSE COLOUR7
2030PRINTTAB(6,6)"SCORE=" :S%
2040COLOUR9
2050COLOUR4:PRINTTAB(4,15)CHR#2
49
2060COLOUR7:PRINTTAB(4,17)CHR#2
51
2070COLOUR6:PRINTTAB(3,19)CHR#2
40+CHR#248+CHR#242
2080COLOUR5:PRINTTAB(4,21)CHR#2
32
2090COLOUR1:PRINTTAB(0,3)"MINES
- -ONE IS" :COLOUR3:PRINTTAB(6,3)
CHR#228
2100COLOUR10:PRINTTAB(14,3)"*LI
VE*"
2110COLOUR3
2120PRINTTAB(5,15)"....."
2130PRINTTAB(5,17)"....."

2140PRINTTAB(6,19)"....."
2150PRINTTAB(5,21)"....."

2160COLOUR2
2170PRINTTAB(14,15)"20"
2180PRINTTAB(14,17)"50"
2190PRINTTAB(14,19)"100"
2200PRINTTAB(14,21)"200"
2210IFSX% $\lt$ HIGH OR S% $\neq$ HIGH GOTO22
50ELSEHIGH=S%
2220*FX15,0
2230COLOUR3:PRINTTAB(14,26)"---
" :COLOUR1:PRINTTAB(3,25):INPUT"
YOUR NAME-?"H1#
2240IFLEN(H1#) $\lt$ 3 GOTO2230
2250COLOUR13:PRINTTAB(1,26)"SPA
LE-BAR TO PLAY!"
2260REPEAT:UNTIL INKEY(-99)
2270PRINTTAB(0,30)" " :FURN=0T03
0:FORG=0T050:NEXT:PRINT" " :NEXT

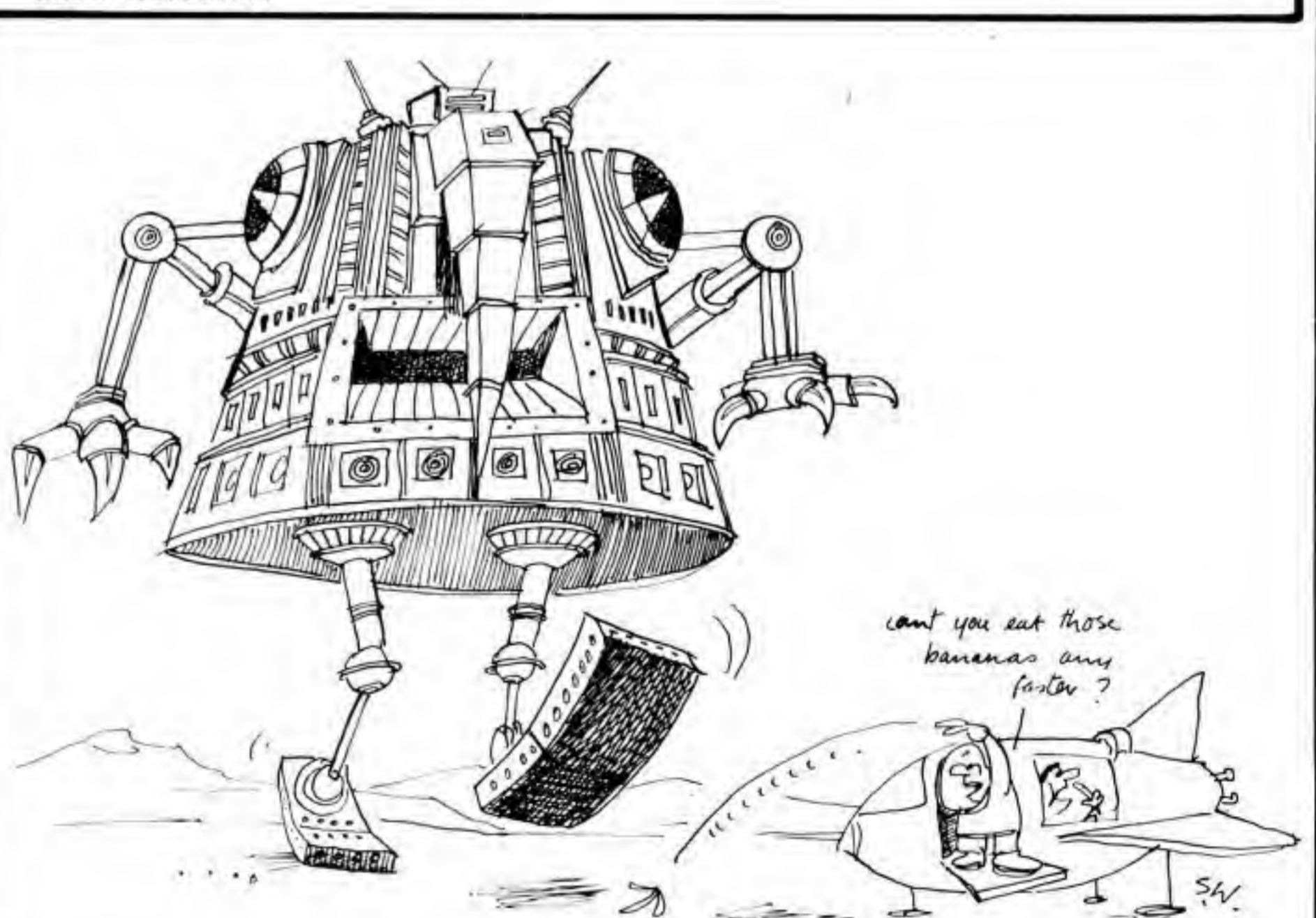
2280VDU5
2290PROC_LAND

```

```

2300ENDPROC
2310REM*****
****
2320DEF PROC_DROPA
2330IFFIT=1FIT=0:SOUND3,3,255,6
0:GOTO2350
2340GCOL3,5:MOVEDY%,DY%:VDU225
2350DY%=DY%-110
2360GCOL3,5:MOVEDX%,DX%:VDU225
2370IFDY% $\neq$ -200<LY% GCOL0,9:MOVED
X%+32,DX% $\neq$ -32:DRAW640,LY%+84:PROC
END
2380ENDPROC
2390REM*****
****
2400DEF PROC_CLEAR
2410MOVEDX%,DY%:GCOL3,5
2420IFDROP=0 VDU ODX%-10 ELSEVDU
225
2430ENDPROC
2440REM*****
****
2450DEF PROC_WIPE(CG%,WX%,WY%,C
#)
2460SOUND0,4,RND(4)+3,10
2470GCOL3,CG%:MOVEWX%,WY%:PRINT
C#
2480ENDPROC
2490REM*****
****
2500DEF PROC_MINE
2510IFCATX%=1ENDPROC
2520IFMIX%+64 $\gt$ SHIPX%-32ANDMIY% $\lt$ 
SHIPX%+96ANDMIY% $\neq$ -16<SHIPY%ANDMIY
% $\gt$ SHIPY%-32 SOUND1,4,1,20:CATX%=1
:GCOL0,10:MOVESHIPX% $\neq$ -64,SHIPY%:V
DU234,235,236
2530ENDPROC
2540REM*****
****
2550DEF PROC_BURD_HI
2560GCOL0,4:MOVE60,974:DRAW1220
,974:DRAW1220,915:DRAW60,915:DRW
60,974
2570JDX%=0:RETX%=FALSE
2580REPEAT
2590JDX%=JDX%+1
2600NX%=10^JDX%
2610IFHIGH-NX% $\lt$ -1 RETX%=TRUE
2620UNTIL RETX%=TRUE
2630LHX%=64*JDX%
2640GCOL0,7:MOVE1205-LHX%,957:P
RINT;HIGH
2650GCOL0,1:MOVE1212-LHX%,950:P
RINT;HIGH
2660GCOL0,7:MOVE481,957:PRINT;"
H1#"
2670GCOL0,1:MOVE481,950:PRINT;"
H1#"
2680ENDPROC

```



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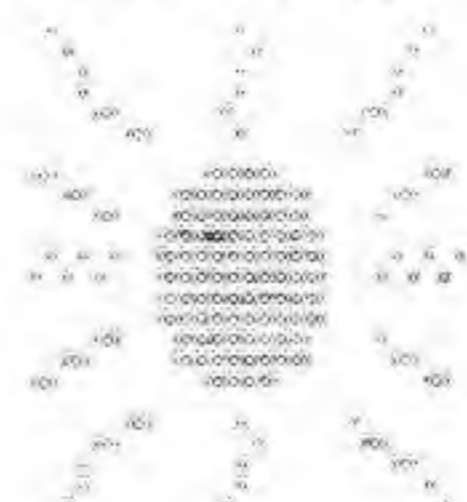
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```

10 ON ERROR GOTO 20
20 MODE2
30 VDU23:8202:0:0:0:CLS:COLO
UR7
40 PRINTTAB(3,5);
50 VDU23,224,248,248,248,248,
248,248,248,248
60 VDU23,225,24,24,24,24,24,2
4,24,24
70 VDU23,226,31,31,31,31,31,3
1,31,31
80 VDU23,227,254,254,254,254,
254,254,254,254
90 VDU23,228,126,126,126,126,
126,126,126,126
100 VDU23,229,127,127,127,127,
127,127,127,127
110 VDU23,230,24,60,126,255,24
,24,24,24
120 VDU23,231,128,64,32,17,11,
7,15,31
130 VDU23,232,16,48,112,255,25
5,112,48,16
140 A#=CHR#224:B#=CHR#225:C#=C
HR#226
150 FOR s%=0TO2
160 PRINTTAB(3,7+s%);
170 FOR c%=0TO1
180 PRINTA#+B#+B#+C#+A#+B#+C#;
190 NEXTc%
200 PRINT" "
210 NEXTs%
220 PRINTTAB(3,10);
230 PRINTCHR#227;
240 FOR x%=0 TO 11
250 PRINTCHR#228;
260 NEXT x%
270 PRINTCHR#229
280 PRINTTAB(3,11);
290 PRINTCHR#227;
300 FOR x%=0 TO 11
310 PRINTCHR#228;
320 NEXT x%
330 PRINTCHR#229
340 PRINTTAB(3,12);

```

KEYBOARD

KEYBOARD permits its user to play tunes on the BBC B by pressing keys. The BBC can be used as a piano, an organ, as a synthesiser, or in "fantasy" mode. The program will RUN on an Electron, although the sound effects will not be so varied or realistic. It can also be RUN in Mode 5 on the BBC A.

Written by Philip and Stephen Gales of Hornchurch, Essex.




```

350 PRINTCHR#227;
360 FOR x%=0 TO 11
370 PRINTCHR#228;
380 NEXT x%
390 PRINTCHR#229
400 FOR x%=0 TO 12
410 COLOUR10:PRINTTAB(3+x%);CH
R#230;
420 NEXT x%
430 FOR z%=0 TO 2
440 COLOUR13:PRINTTAB(3+z%,5);
CHR#231;
450 NEXT z%
460 FOR z%=0 TO 1
470 PRINTTAB(7+z%,5);CHR#231);
NEXTz%
480 FOR z%=0 TO 2
490 PRINTTAB(10+z%,5);CHR#231);
NEXTz%
500 FOR z%=0 TO 1
510 PRINTTAB(14+z%,5);CHR#231);
NEXTz%
520 COLOUR14:PRINTTAB(3,4);"12
3 56 890 ↑"
530 COLOUR9:PRINTTAB(3,15);"t0
WERTYUIOPQL "
540 COLOUR7
550 PROCX
560 *KEY0 e
570 *KEY1 f
580 *KEY2 g
590 *KEY3 h
600 *KEY4 i
610 PROCENV1
620 *FX11,30
630 *FX12,20
640 A#="102W3ER5T6YU8I900PQ^E\
-"
650 B#=INKEY$(0)
660 IF INKEY(-1)F=19:PROCSTOP:
GOTO 740
670 IF B#="e" PROCENV1
680 IF B#="f" PROCENV2
690 IF B#="g" PROCENV3
700 IF B#="h" PROCENV4
710 IF B#="i" PROCENV5
720 F=INSTR(A#,B#)+1
730 IF B#=""THEN 650 ELSEPROCS
TOP
740 SOUND1,1,(F#4)-4,5
750 IF INKEY(-99)PROCE
760 IF INKEY(-98)PROCU
770 IF INKEY(-105)PROCD
780 COLOUR7:PROCX
790 GOTO650
800 DEFPROCSTOP:*FX15,0
810 ENDPROC
820 DEFPROCENV2:COLOUR1:PRINTT
AB(2,20);"f1= XYLOPHONE MODE " :E
NVELOPE1,1,0,0,1,1,1,1,-4,-12,-4

```

```

,-4,126,100:FOR T=0 TO 1000:NEXT
:ENDPROC
830 DEFPROCENV1:COLOUR4:PRINTT
AB(2,19);"f0= PIANO MODE " :EN
VELOPE1,1,0,0,0,1,1,1,-1,-3,-1,-
1,126,100:FOR T=0 TO 1000:NEXT:E
NDPROC
840 DEFPROCENV3:COLOUR2:PRINTT
AB(2,21);"f2= ORGAN MODE " :EN
VELOPE1,5,1,-1,1,1,1,1,-4,-12,-4
,-4,126,100:FOR T=0 TO 1000:NEXT
:ENDPROC
850 DEFPROCENV4:COLOUR5:PRINTT
AB(2,22);"f3= FANTASY MODE " :
ENVELOPE1,1,100,10,100,1,10,1,-1
,-3,-1,-126,126,100:FOR T=0 TO 1
000:NEXT:ENDPROC
860 DEFPROCENV5:COLOUR3:PRINTT
AB(2,23);"f4= SYNTH MODE " :EN
VELOPE1,1,0,10,0,1,1,1,-1,-3,-1,
-126,126,100:FOR T=0 TO 1000:NEX
T:ENDPROC
870 DEFPROCU
880 FOR i%=0TO45
890 SOUND1,-15,i%,1
900 SOUND2,-15,i%,1
910 SOUND3,-15,i%,1
920 NEXTi%
930 ENDPROC
940 DEFPROCD
950 FOR y%=45 TO 0 STEP-1
960 SOUND1,-15,y%,1
970 SOUND2,-15,y%,1
980 SOUND3,-15,y%,1
990 NEXTy%
1000 ENDPROC
1010 DEFPROCE
1020 FOR a%=-15 TO 0
1030 SOUND0,a%,4,4
1040 NEXTa%
1050 ENDPROC
1060 DEFPROCX
1070 PRINTTAB(2,19);"f0= PIANO
MODE"
1080 PRINTTAB(2,20);"f1= XYLOPH
ONE MODE"
1090 PRINTTAB(2,21);"f2= ORGAN
MODE"
1100 PRINTTAB(2,22);"f3= FANTAS
Y MODE"
1110 PRINTTAB(2,23);"f4= SYNTH
MODE"
1120 PRINTTAB(2,24);"Z = UP SYN
TH"
1130 PRINTTAB(2,25);"V = Down S
YNTH"
1140 PRINTTAB(2,26);"SP= EXPLOS
ION"
1150 ENDPROC

```


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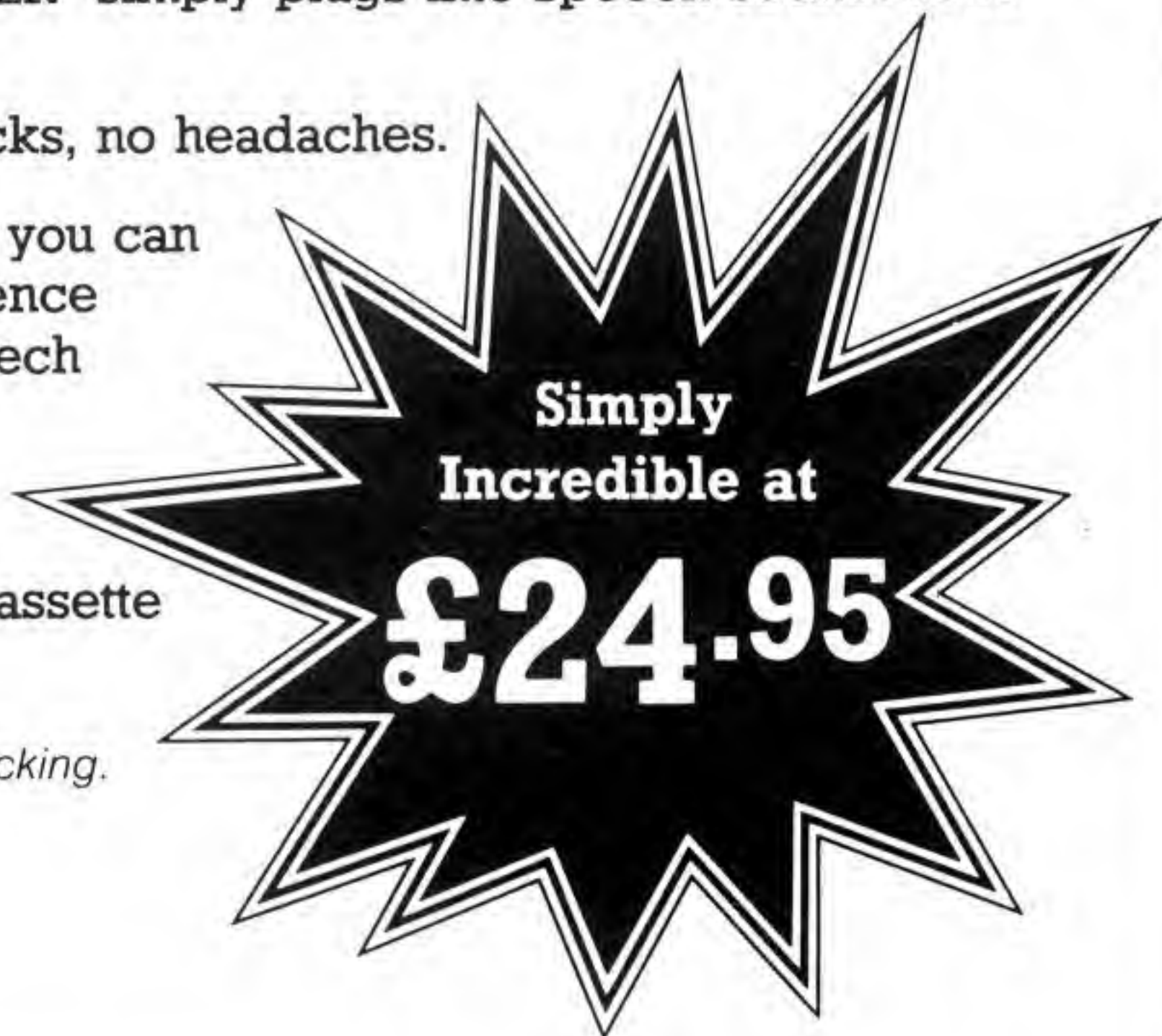
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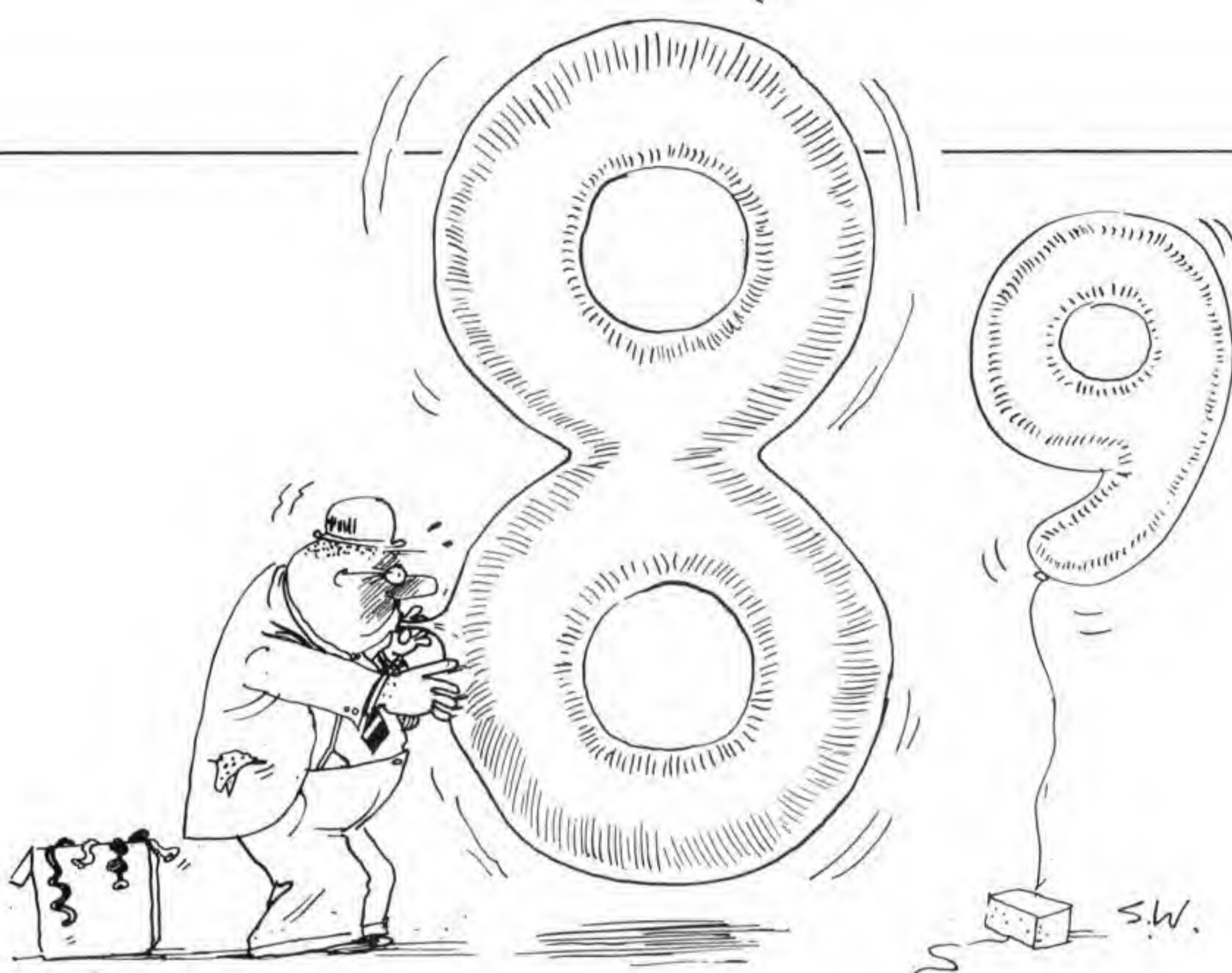
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Octal Characters

OCTAL CHARACTERS incorporates a short assembly language routine which converts decimal to binary. When RUN the program will print any character typed-in eight times larger than normal size.

Written for the BBC B and Electron by C J Locke of Winscombe, Avon.

```
10 REM >> DECIMAL TO BINARY R
ROUTINE
```

```
20 FOR I%=0 TO 2 STEP 2
30 P%=&D00
40 LOPT I%
50 .START
60 CLC
70 ROL&70
80 BCC SPACE
90 LDA&255
100 JSR&FFEE
110 JMP CHECK
120 .SPACE
130 LDA&32
140 JSR&FFEE
150 .CHECK
160 LDA&70
170 BEQ FINISH
180 JMP START
190 .FINISH
200 RTS:J
210 NEXT I%
220 REM >> MAIN PROGRAM
230 MODE 0
240 VDU 23,8202,0,0,0,
250 VDU 23,255,0,&18,&7E,&7E,&
FF,&7E,&7E,&18
260 VDU 19,0,4,0,19,1,3,0,
270 REPEAT
280 A=GET
290 Z=&C000+(8*(A-32))
300 FOR X=Z TO Z+7
310 ?&70=?X
320 CALL&D00
330 PRINT
340 NEXT X
350 UNTIL FALSE
```



GOLD SEARCH

A LARGE GRID is displayed on the screen and in one of the squares on that grid gold is hidden. Move your man round the screen by entering the co-ordinates of the square to which he must move. After each turn the direction in which the

gold can be found will be displayed and a section of the screen in which the gold is not present will be blocked-off.

Gold Search was written for the BBC B and Electron by A Beesley of Abingdon, Oxon, who has used it at school for educational purposes.

```

10REM ** A D BEELEY 1982 **
20REM ** 55 WHITEHORNS WAY, D
RAYTON **
30REM ** ABINGDON, OXON. OX14
4LH **
40REM ** (0235)31186 **
50MODE1
60*FX11,0
70DIMN$(11),$(11)
80FORJ=1TO10:N$(J)="BBC Compu
ter":$(J)=0:NEXTJ
90$(10)=0:T=20
100CLS
110PROCINSTRUCTION
120GX=((RND(22)-1)*50)+110:GY=
((RND(16)-1)*50)+237:GOLD=0
130BU=50
140VDU24,0,110,1279,1623)
150VDU28,0,30,39,29
160COLOUR128
170VDU23,240,28,28,0,127,8,20,
34,65
180VDU5
190PROCSCREEN
200REPEAT
210PROCGRID
220PROCMOVE
230PROCMOVEMAN
240PROCHECK
250T=T-1:BU=BU-10:IFBU<0THENBU
=0
260UNTILT<=0 OR GOLD=99
270VDU4:CLS
280VDU5:CLG
290IF GOLD=99 THEN120
300PROCEND
310GOTO90
320DEFPROCMOVEMAN
330VDU5
340GCOL4,1
350NX=(X*50)+110:NY=(Y*50)+237
360MOVENX,NY
370VDU240
380ENDPROC
390DEFPROCINSTRUCTION
400COLOUR2:PRINT""S E A R C
H F O R G O L D"
410PRINT"-----

```




J. Williams

```

-----"
420*FX15,0
430PRINT"Hello, may I have yo
ur name please?"
440INPUTN$(10)
450N$(10)=LEFT$(N$(10),16)
460IFN$(10)=""THEN430
470PRINT
480PRINT"In this game you hav
e to find as many pots of gold
as you can. You have got 20 m
oves, and after each move you ar
e given a clue as to the direc
tion the gold is in."
490PRINT"You are also given a
visual clue, due to the fact
that part of the area you need
n't search is blotted out in whi
te."
500PRINT"Enter your choice by
using co-ordinates, enter the nu
mbers with a comma between them
: E.G. 12,4"
510PRINT"          SEARCH VERY CAR
EFULLY"
520PRINT""          Any key to sta
rt."
530PROCSPACE
540ENDPROC
550DEFPROCSPACE
560VDU23;B202;0;0;0;
570A#=INKEY$(10000)
580 ENDPROC
590DEFPROCSCREEN
600GCOL0,129:CLG
610GCOL0,2
620MOVE1200,200:DRAW100,200:DR
AW100,1000
630FOR Y%=200TO1100STEP50:MOVE1
00,Y%:DRAW90,Y%:NEXT Y%
640FOR X%=100TO1200STEP50:MOVE X
%,200:DRAW X%,190:NEXT X%
650G=47
660FOR X%=110TO560STEP50:G=G+1:
MOVE X%,180:VDUG:NEXT X%
670G=47
680FOR X%=610TO1060STEP50:G=G+1
:MOVE X%,180:VDU49:MOVE X%,150:VDU
G:NEXT X%
690G=47
700FOR X%=1110TO1160STEP50:G=G+
1:MOVE X%,180:VDU50:MOVE X%,150:VD
UG:NEXT X%
710G=47
720FOR Y%=240TO690STEP50:G=G+1:
MOVE 60,Y%:VDUG:NEXT Y%
730G=47
740FOR Y%=740TO990STEP50:G=G+1:
MOVE 60,Y%:VDUG:NEXT Y%
750FOR Y%=740TO990STEP50:MOVE 30

```



```

,Y%·VDU49·NEXTY%
760ENDPROC
770DEFPROCGRID
780GCUL0,0·FORX%=150TO1200STEP
50·MOVEX%,1000·DRAWX%,200·NEXTX%
790FORY%=250TO1050STEP50·MOVE1
200,Y%·DRAW100,Y%·NEXTY%
800ENDPROC
810DEFPROCMOVE
820VDU4
830*FX15,0
840PRINT"Score = ";S(10); "
here now";
850INPUTX,Y
860IFX>210R%<BURY<BURY>15THENV
DU7·GOTO840
870ENDPROC
880DEFPROCHECK
890VDU4
900IFNX=GX AND NY=LY THENPRINT
"You've done it - you found the
gold."·S(10)=S(10)+T+BU·PROCSOUN
D·A$=INKEY$(1000)·GOLD=99·PRINT·
ENDPROC
910PRINT"Left: ";T; " Go "
;
920IF NY>LY THENPRINT"south";
930IF NY<LY THENPRINT"north";
940IF NX<GX THENPRINT"east";
950IF NX>GX THENPRINT"west";
960PRINT" of ";X;","Y
970VDU5
980GCUL1,3
990IFNX>GX THEN A=NX-10·PROCE
1000IFNX=GX THEN A=NX-10·B=NX+4
0·PROCWE
1010IFNX<GX THEN A=NX+40·PROCW
1020IFNY>LY THEN A=NY-37·PROCN
1030IFNY<LY THEN A=NY+13·PROCS
1040IFNY=LY THEN A=NY-37·B=NY+1
3·PROCNS
1050PROCMEVEMAN
1060ENDPROC
1070DEFPROC
1080MOVE100,A·MOVE100,1000·PLOT
85,1200,1000·MOVE1200,A·PLOT85,1
00,A
1090ENDPROC
1100DEFPROC
1110MOVE100,A·MOVE100,200·PLOT8
5,1200,200·MOVE1200,A·PLOT85,100
,A
1120ENDPROC
1130DEFPROC
1140MOVEA,200·MOVE1200,200·PLOT
85,1200,1000·MOVEA,1000·PLOT85,A
,200
1150ENDPROC
1160DEFPROC
1170MOVEA,200·MOVE100,200·PLOT8

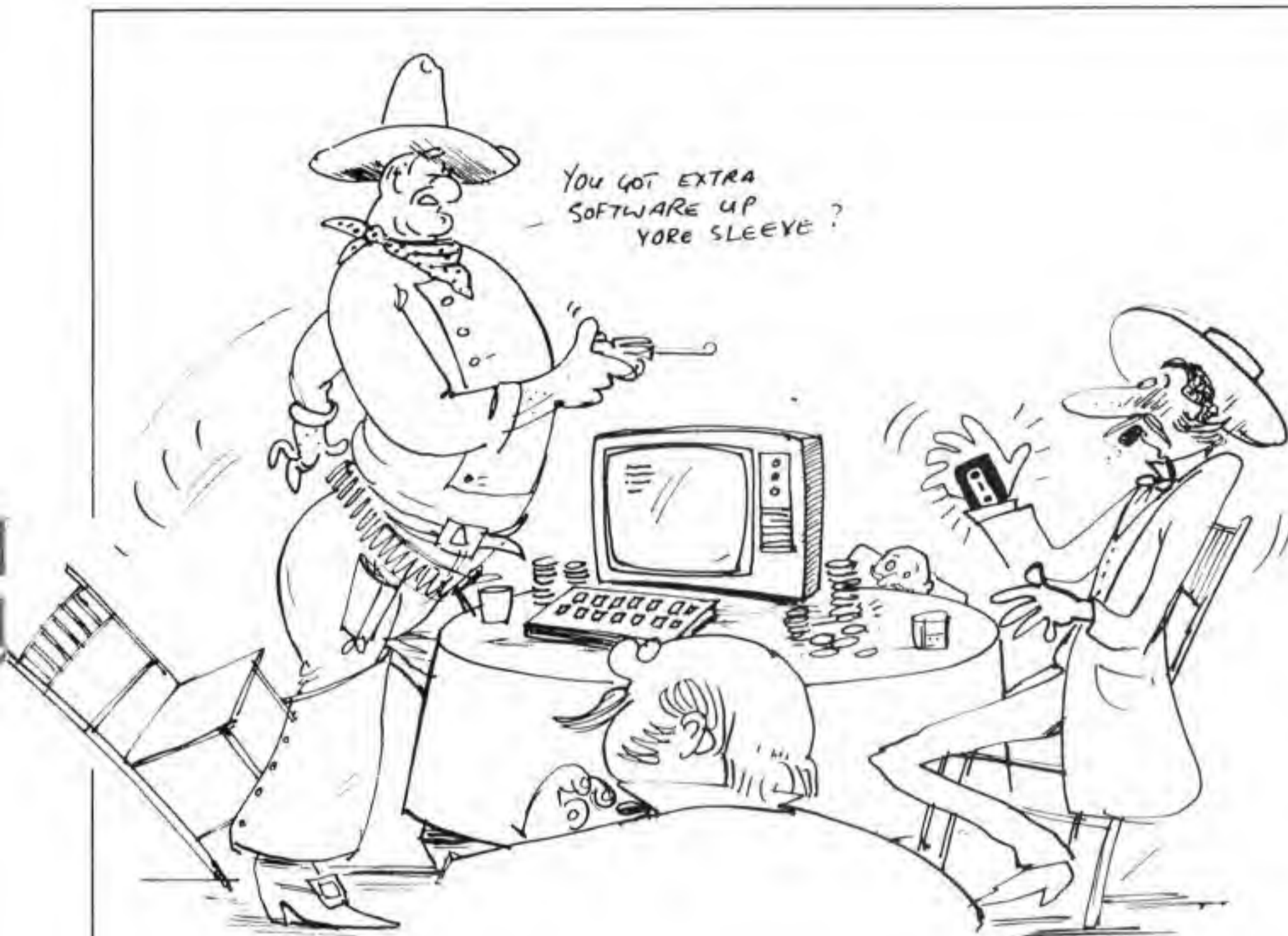
```

```

5,100,1000·MOVEA,1000·PLOT85,A,2
00
1180ENDPROC
1190DEFPROCNS
1200MOVE100,B·MOVE100,1000·PLOT
85,1200,1000·MOVE1200,B·PLOT85,1
00,B·MOVE100,A·MOVE100,200·PLOT8
5,1200,200·MOVE1200,A·PLOT85,100
,A
1210ENDPROC
1220DEFPROCWE
1230MOVEA,200·MOVE100,200·PLOT8
5,100,1000·MOVEA,1000·PLOT85,A,2
00·MOVEB,200·MOVE1200,200·PLOT85
,1200,1000·MOVEB,1000·PLOT85,B,2
00
1240ENDPROC
1250DEFPROCEND
1260MOVE0,1000
1270PRINT"" SEARCH S
CORE BOARD"
1280PRINT"
-----"
1290FORL=1TO10
1300IFS(L)<S(L+1)THENF$=N$(L)·N
$(L)=N$(L+1)·F=S(L)·S(L)=S(L+1)·
N$(L+1)=F$·S(L+1)=F·L=0
1310NEXTL
1320PRINT
1330PRINT" TOP TEN SCORES:"
1340PRINT'
1350FORJ=1TO10
1360PRINTS(J); " ";N$(J)
1370NEXT
1380PROCSOUND
1390*FX15,0
1400A$=INKEY$(10000)
1410ENDPROC
1420DEFPROC SOUND
1430ENVELOPE3,7,2,1,1,1,1,121
,-10,-5,-2,120,120
1440SOUND2,3,200,20
1450ENDPROC

```





HIGH LOW

THE COMPUTER will pick a card and the player must guess whether the next card will be higher or lower in value and bet on that guess. The aim is to win £5,000 in 10 turns.

High-Low was written for the BBC B and Electron by Andrew Everitt of Wantage, Oxon.

```

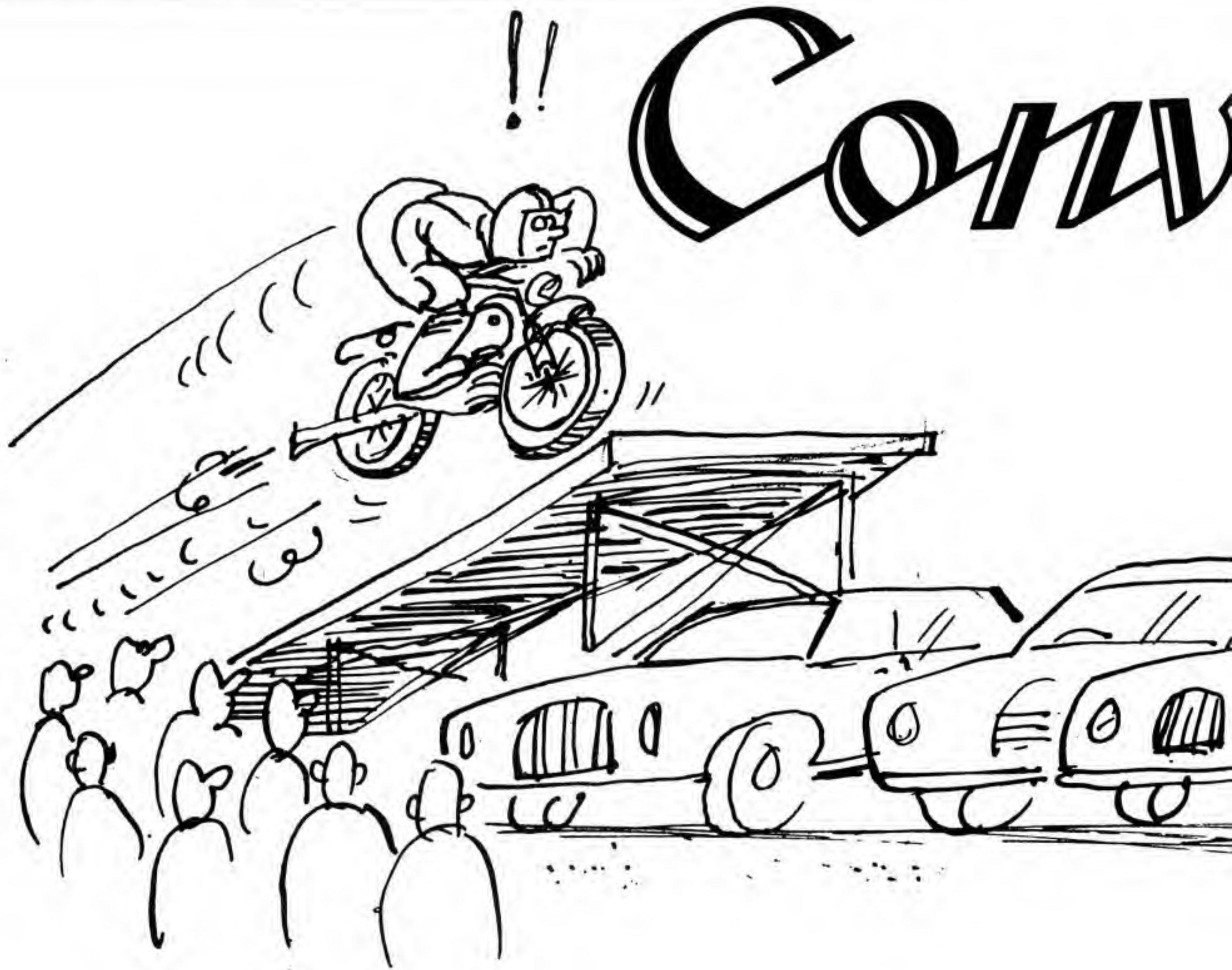
10 CLS
20 A=200
30 PRINT"YOU START WITH £200"
40 PRINT"YOU HAVE 10 GOES TO
GET TO REACH £5000"
50 PRINT:PRINT:PRINT" THE AIM
IS TO SAY WHETHER THE NEXT CARD
WILL BE HIGHER OR LOWER THAN THE
LAST CARD."
60 PRINT" EACH TIME, YOU GET
A CHANCE TO BET SOME MONEY ON YOU
R CHOICE"
70 PRINT"          YOUR MINIMUM
BET IS £50"
80 PRINT TAB(0,25);"PRESS ANY
KEY TO START"
90 E=GET
100 C=RND(12)+1
110 FOR B=1 TO 10
120 CLS
130 PRINT"GO NUMBER ";B
140 PRINT:PRINT
150 PRINTTAB(12,1);"YOU HAVE £
";A
160 PRINT:PRINT
170 PRINT"YOUR CARD IS A ";C
180 D=RND(12)+1
190 PRINT"DO YOU THINK THE NEX
T CARD IS HIGHER(H) OR LOWER(L)?
"
200 A#=GET#
210 IF A#<>"H" AND A#<>"L" THEN
YOU7:GOTO200
220 PRINT:INPUT"HOW MUCH DO WA
NT TO BET? £"F

```

```

230 IF F<50 THEN PRINT"MINIMUM
IS £50":GOTO 220
240 IF F>A THEN PRINT"YOU HAVE
ONLY GOT £";A:GOTO210
250 PRINT:PRINT
260 IF A#="H" AND D>C OR A#="L
" AND D<C THEN PRINTCHR(136);"C
ORRECT":A=A+F ELSEPRINTCHR(136)
;"WRONG":A=A-F
270 PRINT"THE CARD WAS A ";D
280 IF A<50 THEN 380
290 IF A>=5000 THEN 360
300 C=D
310 PRINT"PRESS ANY KEY TO CON
TINUE"
320 E=GET
330 NEXT
340 PRINT" YOU DID NOT MAKE I
T TO THE TARGET BUT STILL WON £"
;A
350 PRINT:PRINT:GOTO 400
360 PRINT"WELL DONE...YOU HAVE
WON THE CAR IN ";B;" GOES
"
370 PRINT:PRINT:GOTO 400
380 PRINT"YOU HAVE RUN OUT OF
MONEY"
390 PRINT"YOU LASTED ";B;" GOE
S"
400 PRINT"DO YOU WANT ANOTHER
GO(Y/N)"
410 E#=GET#
420 IF E#="Y" OR E#="y" THEN R
UN ELSE END

```

```

10 REM*** PROGRAM FOR CONVERSION OF METRIC AND IMPERIAL UNITS
. ***
20 REM*** BY IAN TAYLOR ***
100 MODE6
110 DIM M%(20):N=0
120 PROC_colour
200 CLS:PRINTTAB(0,1)"THIS PROGRAM WILL CONVERT METRIC UNITS TO IMPERIAL AND VISA VERSA."
210 PRINTTAB(0,4)"THE ANSWERS TO THE CONVERSIONS WILL BE STORED IN MEMORY UNTIL THE PROGRAM IS ENDED."
220 PRINTTAB(0,8)"THE MEMORY CAN BE REVIEWED AFTER EACH CONVERSION."
230 INPUTTAB(0,11)"PRESS 'RETURN' KEY TO CONTINUE..."
240 REPEAT UNTIL A=INKEY(-74)
290
300 CLS:PRINTTAB(1,3)"DO YOU WANT TO:-"
310 PRINTTAB(3,5)"(1) CONVERT METRIC UNITS TO IMPERIAL"
320 PRINTTAB(1,7)"OR"
330 PRINTTAB(3,9)"(2) CONVERT IMPERIAL UNITS TO METRIC"
340 PRINTTAB(1,12)"ENTER PROCEDURE NUMBER...":GOTO 400
350
360 PRINT:PRINT M%(N)
370 PROC_store:PROC_re_select
390
400 ON INSTR("1234",GET#)GOTO 410,430,450,5000 ELSE 400
410 PROC_menu_met_imp
420 Y%=Y%*100+1000:GOTO Y%
430 PROC_menu_imp_met

```

```

440 Z%=Z%*100+3000:GOTO Z%
450 PROC_mem:PROC_re_select:GOTO 400
990
1000 REM*** MET. TO IMP. CONVERSIONS**
1100 CLS:PRINTTAB(1,2)"PROGRAM (1)"
1110 PRINT:INPUT"ENTER TEMPERATURE IN DEGREES C...":c
1120 f=((c*9)/5)+32
1130 M%(N)=STR$(c)+" DEGREES C. = "+STR$(f)+" DEGREES F.":GOTO 360
1200 CLS:PRINTTAB(1,2)"PROGRAM (2)"
1210 PRINT:INPUT"ENTER DISTANCE IN CMS...":c
1220 i=c*0.3937
TR$(1)+" INS.":GOTO 360
1300 CLS:PRINTTAB(1,2)"PROGRAM (3)"
1310 PRINT:INPUT"ENTER DISTANCE IN METRES...":m
1320 f=m/0.30481:t=INT f:i=(f-t)*12
1330 IF i<0.1 THEN i=0
1340 M%(N)=STR$(m)+" METRES = "+STR$(f)+" FEET"+" OR "+STR$(t)+" FEET "+STR$(i)+" IN.":GOTO 360
1400 CLS:PRINTTAB(1,2)"PROGRAM (4)"
1410 PRINT:INPUT"ENTER DISTANCE IN KILOMETRES...":k
1420 m=k*0.621
1430 M%(N)=STR$(k)+" KM. = "+STR$(m)+" MILES":GOTO 360
1500 CLS:PRINTTAB(1,2)"PROGRAM

```

```

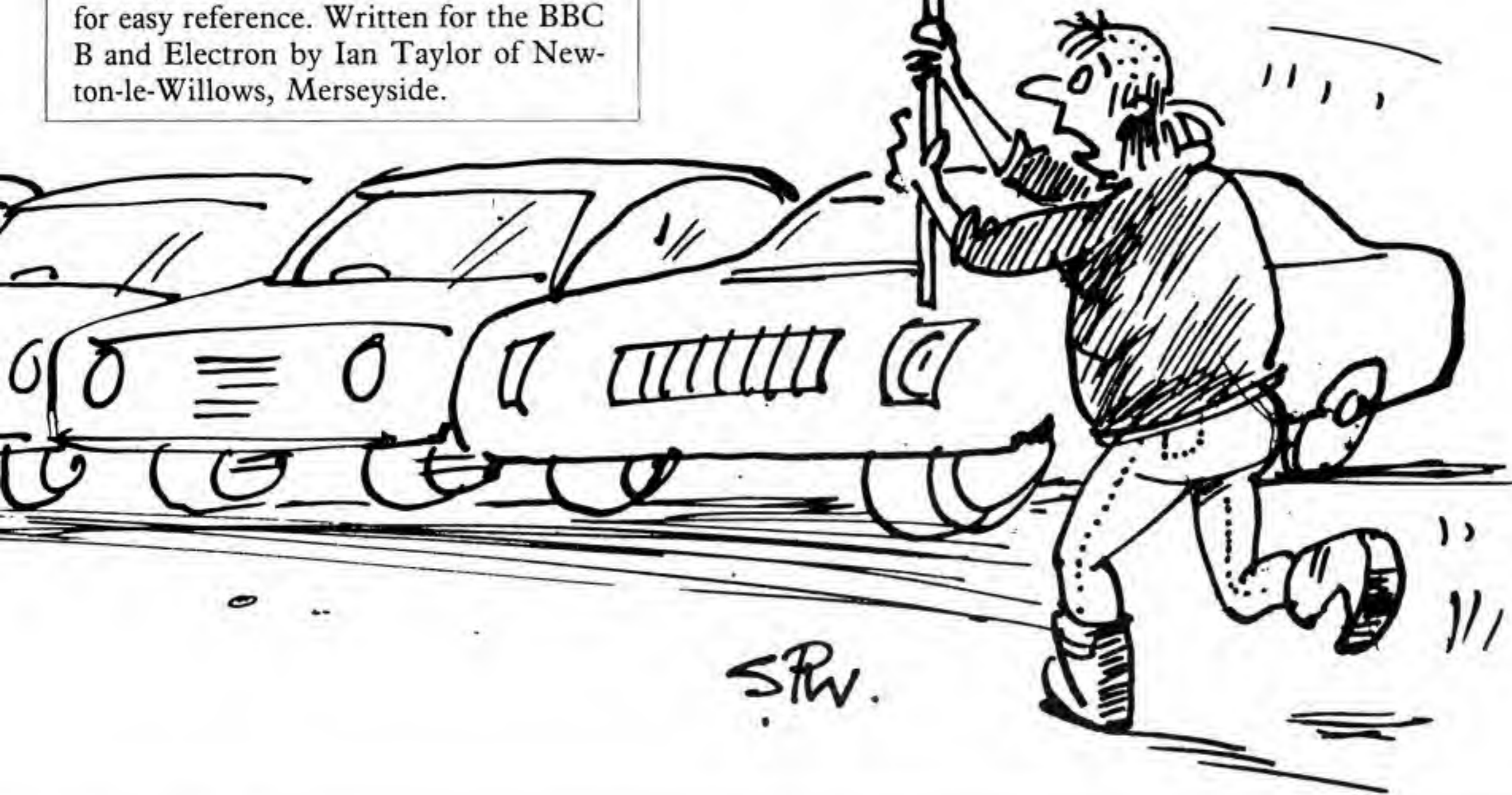
(5)"
1510 PRINT:INPUT"ENTER AREA IN SQ. CMS...":c
1520 i=c*0.155
1530 M%(N)=STR$(c)+" SQ. CMS. = "+STR$(i)+" SQ. INS.":GOTO 360
1600 CLS:PRINTTAB(1,2)"PROGRAM (6)"
1610 PRINT:INPUT"ENTER AREA IN SQ. METRES...":m
1620 y=m*1.196:f=y*9
1630 M%(N)=STR$(m)+" SQ. M. = "+STR$(f)+" SQ. FT. OR "+STR$(y)+" SQ. YDS.":GOTO 360
1700 CLS:PRINTTAB(1,2)"PROGRAM (7)"
1710 PRINT:INPUT"ENTER AREA IN SQ. KILOMETRES...":k
1720 m=k*0.3861:a=k*247.1
1730 M%(N)=STR$(k)+" SQ. KM. = "+STR$(m)+" SQ. MILES OR "+STR$(a)+" ACRES":GOTO 360
1800 CLS:PRINTTAB(1,2)"PROGRAM (8)"
1810 PRINT:INPUT"ENTER VOLUME IN CU. CMS...":c
1820 i=c*0.061
1830 M%(N)=STR$(c)+" CU. CMS. = "+STR$(i)+" CU. INS.":GOTO 360
1900 CLS:PRINTTAB(1,2)"PROGRAM (9)"
1910 PRINT:INPUT"ENTER VOLUME IN CU. METRES...":m
1920 f=m*35.31:y=m*1.308
1930 M%(N)=STR$(m)+" CU. M. = "+STR$(f)+" CU. FT. OR "+STR$(y)+" CU. YDS.":G

```


enter

1 METRE
DOES NOT
= 09 YDS

CONVERTER will convert a wide range of metric units to Imperial, or Imperial units to metric, and store the results in memory for easy reference. Written for the BBC B and Electron by Ian Taylor of Newton-le-Willows, Merseyside.



```
0100 CLS:PRINTTAB(1,2)"PROGRAM
(10)"
2010 PRINT:INPUT"ENTER WEIGHT I
N GRAMMES...",g
2020 o=g*0.035
2030 M$(N)=STR$(g)+" GMS. = "+S
TR$(o)+" OZS." :GOTO 360
2100 CLS:PRINTTAB(1,2)"PROGRAM
(11)"
2110 PRINT:INPUT"ENTER WEIGHT I
N KILOGRAMMES...",k
2120 P=k*2.20465 :l=INT(P) :o=(P-l)
*16
2130 IF o<0.1 THEN o=0
2140 M$(N)=STR$(k)+" KG. = "+ST
R$(P)+" LBS.
OR "+STR$(l)+" LBS. "+STR$(o)+"
OZS." :GOTO 360
2200 CLS:PRINTTAB(1,2)"PROGRAM
(12)"
2210 PRINT:INPUT"ENTER WEIGHT I
N KILOGRAMMES...",k
2220 t=k/1016.05
2230 M$(N)=STR$(k)+" KG. = "+ST
R$(t)+" TONS." :GOTO 360
2300 CLS:PRINTTAB(1,2)"PROGRAM
(13)"
2310 PRINT:INPUT"ENTER VOLUME I
N LITRES...",l
2320 P=l*1.7598 :g=P/8
2330 M$(N)=STR$(l)+" LITRES = "
+STR$(P)+" PINTS
OR "+STR$(g)+" GALLONS" :GOTO
360
2400 CLS:PRINTTAB(1,2)"PROGRAM
(14)"
2410 PRINT:INPUT"ENTER VOLUME I
N LITRES...",l
```

```
2420 o=l/0.0284
2430 M$(N)=STR$(l)+" LITRES = "
+STR$(o)+" FL. OZS." :GOTO 360
3000 REM*** IMP. TO MET. CONVER
SIONS**
3100 CLS:PRINTTAB(1,2)"PROGRAM
(1)"
3110 PRINT:INPUT"ENTER TEMPERAT
URE IN DEGREES F...",f
3120 c=(f-32)*5/9
3130 M$(N)=STR$(f)+" DEGREES F.
= "+STR$(c)+" DEGREES C." :GOTO 3
60
3200 CLS:PRINTTAB(1,2)"PROGRAM
(2)"
3210 PRINT:INPUT"ENTER DISTANCE
IN INCHES...",i
3220 c=i*2.54
3230 M$(N)=STR$(i)+" INS. = "+S
TR$(c)+" CMS." :GOTO 360
3300 CLS:PRINTTAB(1,2)"PROGRAM
(3)"
3310 PRINT:INPUT"ENTER DISTANCE IN FE
ET AND INCHES"
3320 PRINT:INPUT"FEET.....",f
3330 INPUT"INCHES...",i
3340 m=(f+(i/12))*0.3048
3350 M$(N)=STR$(f)+" FT. "+STR$(
i)+" INS. = "+STR$(m)+" METRES"
:GOTO 360
3400 CLS:PRINTTAB(1,2)"PROGRAM
(4)"
3410 PRINT:INPUT"ENTER DISTANCE
IN MILES...",m
3420 k=m*1.60934
3430 M$(N)=STR$(m)+" MILES = "+
STR$(k)+" KM." :GOTO 360
3500 CLS:PRINTTAB(1,2)"PROGRAM
(5)"
```

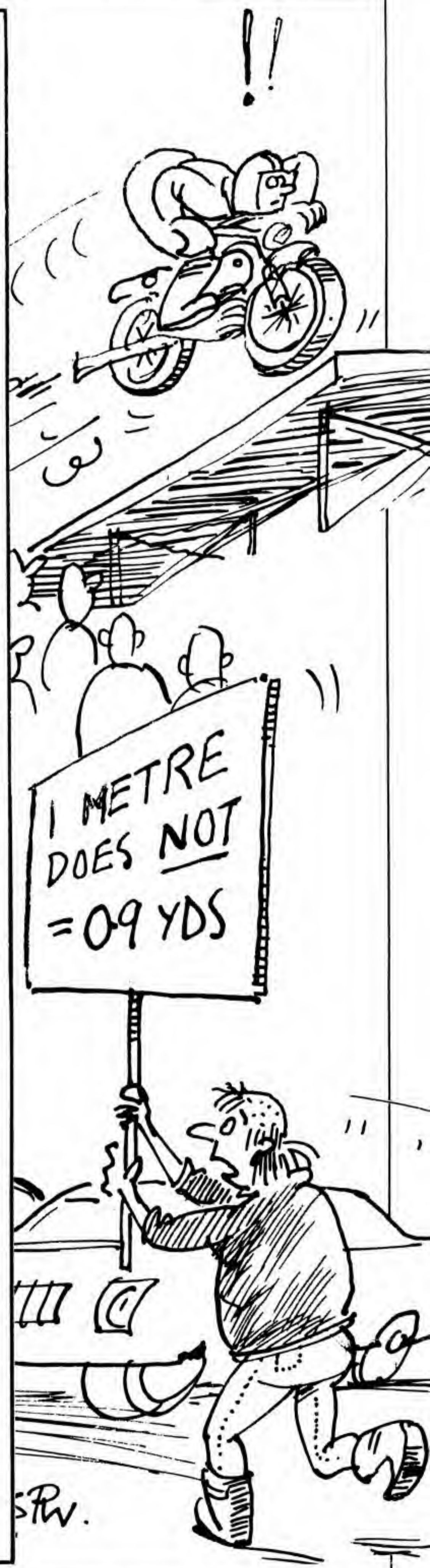
```
3510 PRINT:INPUT"ENTER AREA IN
SQ. INS...",i
3520 c=i*6.425
3530 M$(N)=STR$(i)+" SQ. INS. =
"+STR$(c)+" SQ. CMS." :GOTO 360
3600 CLS:PRINTTAB(1,2)"PROGRAM
(6)"
3610 PRINT:PRINT"ENTER AREA IN
SQ. FT. OR SQ. YDS."
3620 PRINT:INPUT"SQ. YDS...",y
3630 INPUT"SQ. FT....",f
3640 m=(f*0.0929)+(y*0.8361)
3650 M$(N)=STR$(y)+" SQ. YDS.
AND/OR "+STR$(f)+" SQ. FT.
= "+STR$(m)+" SQ. METRES"
:GOTO 360
3700 CLS:PRINTTAB(1,2)"PROGRAM
(7)"
3710 PRINT:PRINT"ENTER AREA IN
SQ. MILES OR ACRES"
3720 PRINT:INPUT"SQ. MILES...",
m
3730 INPUT"ACRES.....",a
3740 k=(m*2.59)+(a*0.00405)
3750 M$(N)=STR$(m)+" SQ. MILES
AND/OR "+STR$(a)+" ACRES
= "+STR$(k)+" SQ. KM." :GU
TO 360
3800 CLS:PRINTTAB(1,2)"PROGRAM
(8)"
3810 PRINT:INPUT"ENTER VOLUME I
N CUBIC INCHES...",i
3820 c=i*16.387
3830 M$(N)=STR$(i)+" CU. INS. =
"+STR$(c)+" CU. CMS." :GOTO 360
3900 CLS:PRINTTAB(1,2)"PROGRAM
(9)"
3910 PRINT:PRINT"ENTER VOLUME I
N CU. YDS. OR CU. FT."
```



```

3920 PRINT:INPUT"CU. YDS...";y
3930 INPUT"CU. FT....";f
3940 m=(y*0.765)+(f*0.0283)
3950 M$(N)=STR$(y)+" CU. YDS.
AND/OR "+STR$(f)+" CU. FT.
      = "+STR$(m)+" CU. METRE
S":GOTO 360
4000 CLS:PRINTTAB(1,2)"PROGRAM
(10)"
4010 PRINT:INPUT"ENTER WEIGHT I
N OUNCES...";o
4020 g=o*28.35
4030 M$(N)=STR$(o)+" OZS. = "+S
TR$(g)+" GRAMMES":GOTO 360
4100 CLS:PRINTTAB(1,2)"PROGRAM
(11)"
4110 PRINT:PRINT"ENTER WEIGHT I
N LBS. AND/OR OZS."
4120 PRINT:INPUT"LBS...";l
4130 INPUT"OZS...";o
4140 k=(l*0.4536)+(o*0.02835)
4150 M$(N)=STR$(l)+" LBS. AND/
OR "+STR$(o)+" OZS.
      = "+STR$(k)+" KG.":GOTO 36
0
4200 CLS:PRINTTAB(1,2)"PROGRAM
(12)"
4210 PRINT:INPUT"ENTER WEIGHT I
N TONS...";t
4220 k=t*1016.05
4230 M$(N)=STR$(t)+" TONS = "+S
TR$(k)+" KG.":GOTO 360
4300 CLS:PRINTTAB(1,2)"PROGRAM
(13)"
4310 PRINT:PRINT"ENTER VOLUME I
N GALS. AND/OR PINTS"
4320 PRINT:INPUT"GALS...";g
4330 INPUT"PINTS...";p
4340 l=(g*4.546)+(p*0.568)
4350 M$(N)=STR$(g)+" GALS. AND
/OR "+STR$(p)+" PINTS
      = "+STR$(l)+" LITRES":G
OTO 360
4400 CLS:PRINTTAB(1,2)"PROGRAM
(14)"
4410 PRINT:INPUT"ENTER VOLUME I
N FLUID OZS...";o
4420 l=o*0.0284
4430 M$(N)=STR$(o)+" FL. OZS. =
"+STR$(l)+" LITRES"
4990
5000 CLS:PRINTTAB(2,1)"OK. PR
OGRAM ENDED."
5010 END
5020
6000 DEF PROCmenu_imp_met
6005 PROCcolour
6010 CLS:PRINTTAB(1,1)"TO CONVE
RT"
6020 PRINT
6030 PRINT"(1) DEGREES C. TO D
EGREES F."
6040 PRINT"(2) CMS. TO INS."
6050 PRINT"(3) METRES TO FEET
& INS."
6060 PRINT"(4) KILOMETRES TO M
ILES"
6070 PRINT"(5) SQ. LMS. TO SQ.
INS."
6080 PRINT"(6) SQ. METRES TO S
Q. FT./YDS."
6090 PRINT"(7) SQ. KM. TO SQ.
MILES/ACRES"
6100 PRINT"(8) CU. CMS. TO CU.
INS."
6110 PRINT"(9) CU. METRES TO C
U. FT./YDS."
6120 PRINT"(10) GRAMMES TO OUNC
ES"
6130 PRINT"(11) KG. TO LBS.& OZ
."
6140 PRINT"(12) KG. TO TONS"
6150 PRINT"(13) LITRES TO PINTS
/GALLONS"
6160 PRINT"(14) LITRES TO FLUID
OZ."
6165 PRINT:PRINT"ENTER REQUIRED
PROGRAM NUMBER..."
6166 PRINT"THEN PRESS 'RETURN'
KEY."
6167 INPUTTAB(33,18)Y%
6170 ENDPROC
6175
6180 DEF PROCmenu_imp_met
6185 PROCcolour
6190 CLS:PRINTTAB(1,1)"TO CONVE
RT"
6200 PRINT
6210 PRINT"(1) DEGREES F. TO D
EGREES C."
6220 PRINT"(2) INS. TO CMS."
6230 PRINT"(3) FEET & INS. TO
METRES"
6240 PRINT"(4) MILES TO KILOME
TRES"
6250 PRINT"(5) SQ. INS. TO SQ.
CMS."
6260 PRINT"(6) SQ. FT./YDS. TO
SQ. METRES"
6270 PRINT"(7) SQ. MILES/ACRES
TO SQ. KM."
6280 PRINT"(8) CU. INS. TO CU.
INS."
6290 PRINT"(9) CU. FT./YDS. TO
CU. METRES"
6300 PRINT"(10) OUNCES TO GRAMM
ES"
6310 PRINT"(11) LBS.& OZ. TO KG
."
6320 PRINT"(12) TONS TO KG."
6330 PRINT"(13) PINTS/GALLONS T
O LITRES"
6340 PRINT"(14) FLUID OZ. TO LI
TRES"
6345 PRINT:PRINT"ENTER REQUIRED
PROGRAM NUMBER..."
6346 PRINT"THEN PRESS 'RETURN'
KEY."
6347 INPUTTAB(33,18)X%
6350 ENDPROC
6355
6360 DEF PROCre_select
6370 PROCcolour
6380 CLS:PRINTTAB(1,3)"DO YOU W
ANT TO:-"
6400 PRINTTAB(3,5)"(1) CONVERT
ANY MORE"
6410 PRINTTAB(7,6)"METRIC UNITS
TO IMPERIAL"
6430 PRINTTAB(3,8)"(2) CONVERT
ANY MORE"
6440 PRINTTAB(7,9)"IMPERIAL UNI
TS TO METRIC"
6460 PRINTTAB(3,11)"(3) REVIEW
INFORMATION IN MEMORY"
6480 PRINTTAB(3,14)"(4) END THE
PROGRAM"
6490 PRINTTAB(1,17)"ENTER PROC
EDURE NUMBER..."
6530 ENDPROC
6590
6600 DEF PROCdelay_2
6610 NOW=TIME
6620 REPEAT UNTIL TIME-NOW=200
6630 ENDPROC
6690
6700 DEF PROCstore
6710 N=N+1
6720 PROCdelay_2
6730 PRINT:PRINT:INPUT"CA
LCULATION STORED IN MEMORY...PRE
SS RETURN KEY TO CONTINUE";A
6740 REPEAT UNTIL A=INKEY-74
6750 ENDPROC
6790
6800 DEF PROCmem
6810 PROCcolour:CLS:VDU14
6820 IF N=0 PRINTTAB(10,1)"MEMO
RY CLEAR."
6830 FOR M=0 TO N
6840 PRINT:PRINT M$(M)
6850 NEXT
6860 PRINT:INPUT"PRESS 'RETURN'
KEY TO CONTINUE..."A
6870 REPEAT UNTIL A=INKEY-74
6880 ENDPROC
6890
6900 DEFPROCcolour
6910 Q=RND(6)
6920 VDU19,0,7:Q;
6930 VDU19,120,0:Q;
6940 ENDPROC

```



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```

1REM *****
2REM * Shooting Gallery *
3REM * M. H. Turney *
4REM * St. Patricks Sch.*
5REM * Rheindahlen *
6REM * BFPO 40 *
7REM * 11.12.1983 *
8REM *****
9
10UN ERROR RUN
15REM set screen down a space
20*TV255
30MODE7:PROC RULES
35REM main Program structure
40MODE5
50:
60PROC INIT
70:
80PROC TITLE
90:
100FOR Z=1 TO 30:REM adjust shots here
110:
115REM random Pause before man appears
120FOR W=1 TO RND(500)+1000:NEXT W
125REM clear hit/miss line
130PRINTTAB(0,8);SPC20
140:
150PROC FIGURE
160:
170PROC ANALYSE
180:
190NEXT Z
200:
210PROC CREDIT
220:
230PROC MOREGO
240:
250END
260:
265REM draw man at rnd Pos. and look for shot
270DEF PROC FIGURE
275REM choose position of man
280A=RND(10)*2-1
285REM adjust for skill previously shown
290IF K=0 THEN B=B-1 ELSE B=B+1
300IF B<0 THEN B=0
305REM compute number of jumps man makes
310V=3+B:REM adjust speed here
315REM flush buffer to stop next shot being spoilt
320*FX15,1
325REM draw man
330FOR X=1 TO V
340PRINTTAB(A,10);CHR$(240)
350PROC PAUSE
360PRINTTAB(A,10);CHR$(242)
370PROC PAUSE
380PRINTTAB(A,10);CHR$(241)
390PROC PAUSE
400PRINTTAB(A,10);CHR$(242)
410PROC PAUSE
415REM look for shot fired
420R$=INKEY$(0):IF ASC(R$)<48 OR ASC(R$)>57 THEN R$=""
425REM stop loop if shot fired
430IF R$="" THEN Y=V
440NEXT X
445REM kill man
450PRINTTAB(A,10);" "
460END PROC
470:
475REM analyse R$
480DEF PROC ANALYSE
485REM make appropriate sound
490IF R$<>"" THEN ENVELOPE2,3,0,0,0,0,0,121,-10,-5,-2,120,120: SOUND0,2,5,5 ELSE SOUND1,-15,20,5
495REM adjust for 0 being pressed
500IF R$="0" THEN R$="10"
505REM increase score if shot correct
510T=VAL(R$):IF T*2-1=A THEN SCORE=SCORE+1
515REM adjust skill factor
520IF T*2-1=A THEN K=0 ELSE K=1
525REM Print result of shot
530IF T*2-1=A THEN PRINTTAB(0,8);"* HIT *" ELSE PRINTTAB(0,8);"* MISS *"

```

GALLERY




```

535REM Print score
540PRINTTAB(6,15);"GO-";2)TAB(
3,17);"SCORE-";SCORE
550ENDPROC
560:
565REM standard Pause
570DEFPROC PAUSE
580FOR T=1 TO 100
590NEXT T
600ENDPROC
610:
615REM Print rules of game
620DEF PROC RULES
630CLS
640FOR X=0 TO 1:PRINTTAB(0,0+X
)CHR#141CHR#131STRING$(34,"#")
650PRINTTAB(0,2+X)CHR#141CHR#1
2
31"# SHOOTING GALLERY #
R Y #
660PRINTTAB(0,4+X)CHR#141CHR#1
31STRING$(34,"#"):NEXT
670PRINT"" When the game st
arts you will see""a little man
POP UP over a number."" If
you Press the same number key,"
"you will be able to shoot the m
an."" A running total of sho
ts taken and"
680PRINT"hits scored will appe
ar under the""target."" You
will have 30 shots."
690PRINTTAB(5,23)CHR#131"Press
any key to continue."
700R=GET
710ENDPROC
720:
725REM Print suitable Phrase a

```

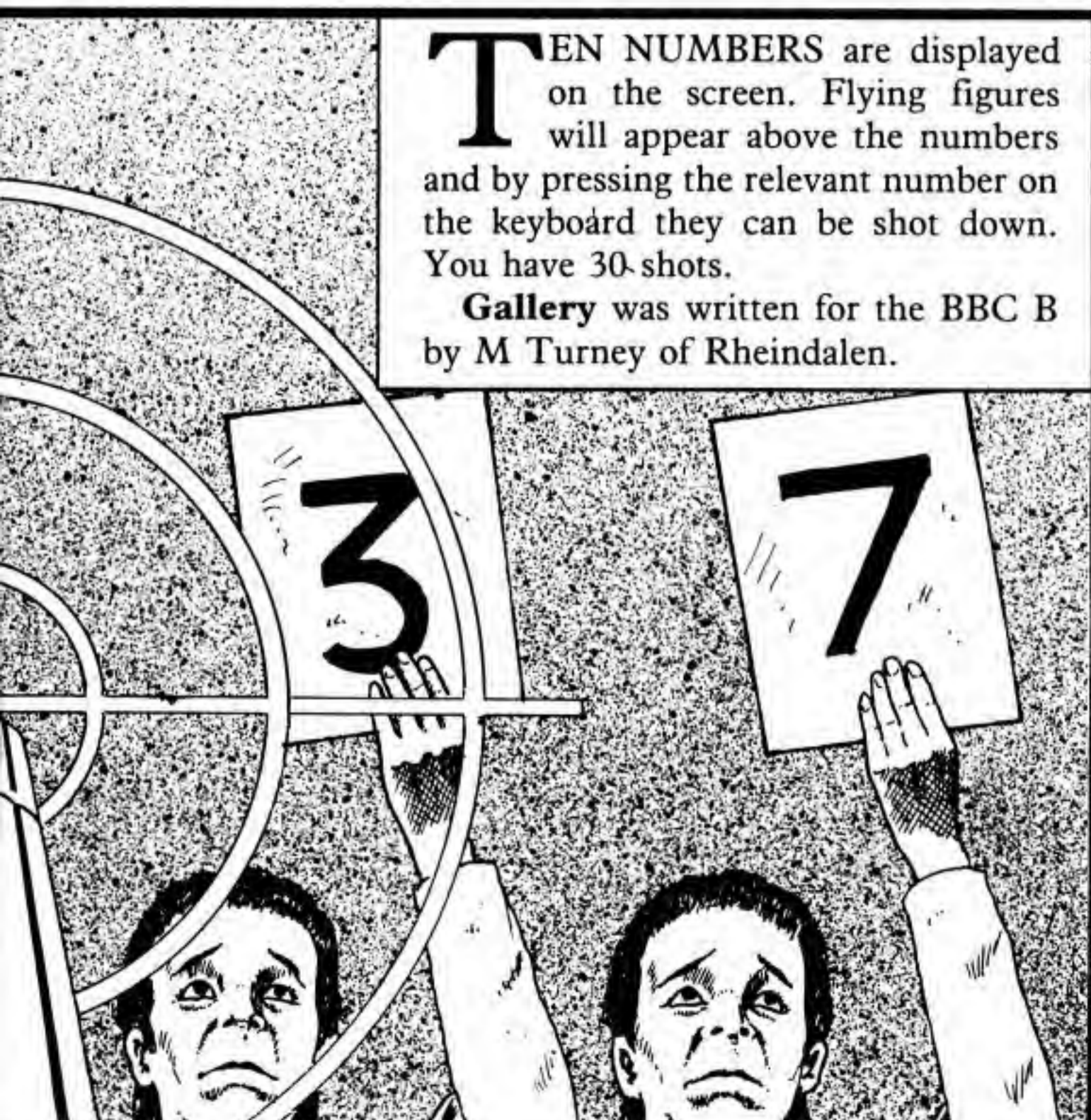
```

t. end of game
730DEF PROC CREDIT
740SC=SCORE
750IF SC<10 THEN PRINT"Practi
ce makes""Perfect...."
760IF SC>=10 AND SC<20 THEN PR
INT"Not bad I suppose!"
770IF SC>=20 AND SC<30 THEN PR
INT"Very good indeed!!!"
780IF SC=30 THEN PRINT"* CRAC
K SHOT, EH! *"
790ENDPROC
800:
805REM initialise variables etc.
810DEF PROC INIT
815REM switch off cursor OS 1:
820VDU23,1,0;0;0;0;
825REM create characters for d
rawing man
830VDU23,240,28,28,8,28,42,85,
20,20
840VDU23,241,28,93,42,28,8,20,
34,65
850VDU23,242,28,28,8,127,8,20,
34,20
855REM switch off auto repeat
860*FX11,0
865REM choose yellow for displ
ay
870COLOUR2
875REM initialise score
880SCORE=0
885REM initialise skill factor
5
890B=4:K=0
900ENDPROC
910:
915REM draw screen titles
920DEF PROC TITLE
930PRINTTAB(0,2)STRING$(20,"E"
):PRINTTAB(0,4)"# SHOOTING GALL
ERY #":PRINTTAB(0,6)STRING$(20,"
#")
940PRINTTAB(0,12);" 1 2 3 4 5
6 7 8 9 0"
950PRINTTAB(0,13)STRING$(20,"_
")
960ENDPROC
970:
975REM ask for another go
980DEF PROC MOREGO
990FOR W=1 TO 100:PROC PAUSE:NE
XT
1000CLS
1010PRINTTAB(0,10);"Would you l
ike""another go (Y/N)"
1020R=GET
1030IF R="Y" THEN RUN
1040ENDPROC
1050:

```

TEN NUMBERS are displayed on the screen. Flying figures will appear above the numbers and by pressing the relevant number on the keyboard they can be shot down. You have 30 shots.

Gallery was written for the BBC B by M Turney of Rheindalen.



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I'M FREDDIE—FLY ME!



...a 747 flight simulator...but I was disappointed with it...basic program unbearable. But, I would like to recommend another flight simulator -F for Freddie—a machine language program from Kansas City Systems.
—Popular Computing Weekly

F FOR FREDDIE IS THE HARDEST GAME THAT YOU WILL EVER PLAY!

Requires absolute concentration to prepare, take-off, fly and land a tri-star jet at varying destinations using a staggering 36 control keys!

If you only play the arcade type of game, needing just a couple of keys and the space bar to play, then this is most certainly not for you

If however, you are prepared to sit at your computer for literally hours on end getting to grips, and then give a considerable amount of effort and time into actually trying to solve it, then this is definitely for you.

Though F for Freddie is a flight simulator type of game, it is not one with simple operation and the ground appearing at the front of you, but is as accurate a simulation of not only flight, but preparation, take-off and the many more occurrences associated with flying a tri-star jet as a 32K micro will allow.

Controls? A mind boggling 36 of them! And it is here where the logic and skill comes in, as everything must be done not only in the correct order but at the right time. Yes, it's in real time, with the clock ticking relentlessly away.

But the great asset of this game is that every little piece of information you require is shown on the screen, nearly fifty in all, continuously being updated, with the colours being cleverly used to depict different, changing, situations.

Eventually you will master the take-off, then even manage to fly and at long last manage to land. But unlike all other games, at this stage you don't put it away for ever, for you have seven different destinations, all on different courses and distances...

There are plenty of instructions on the 36 controls and even a little advice, but as the whole thing is a colossal challenge, you are not told how to fly Freddie, this you have to discover entirely for yourself...

At times you will wish, as most certainly will your family, that you never bought the blasted thing!

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FIGHTER PILOT

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As a fighter pilot you have to destroy the enemy planes before they get to your cities. Control of movement is by joystick: climb, bank and climb starboard, bank starboard, bank and dive starboard, dive, bank and dive port, bank port, bank and climb port, all giving infinite control. Throttle, firing and all other controls are on the keyboard.

At the start of the game you have a view of the runway and it is up to you to take your fighter off without mishap. As you climb away, you switch on the radar, which will show you the position of the enemy. As you get closer the plane will appear on the screen and then it is up to you to get it in your sights and blast away with your air-to-air missile. Certain enemy planes have kamakazi instincts and will dive at your cities, then you are in trouble!

The graphics include a combined Turn and Bank indicator and Artificial Horizon, across the whole screen showing the actual state of your flying at all times. The Radar shows the enemy position in relationship to yourself. The enemy plane is lifelike as is the firing and explosions. Colour is used and of course sound.

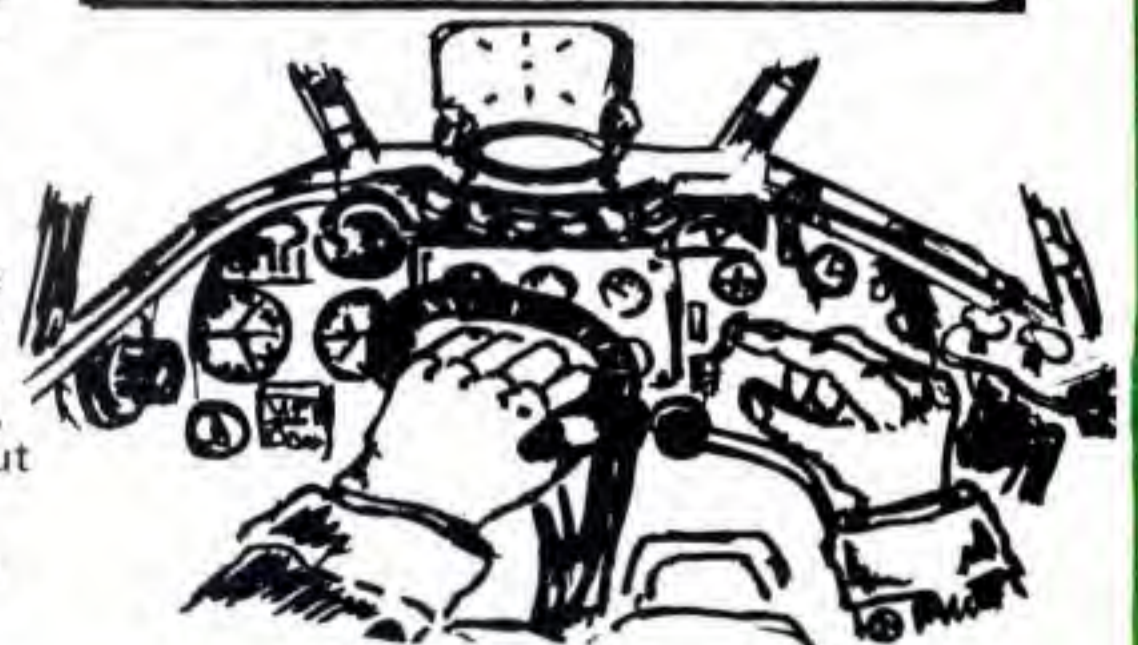
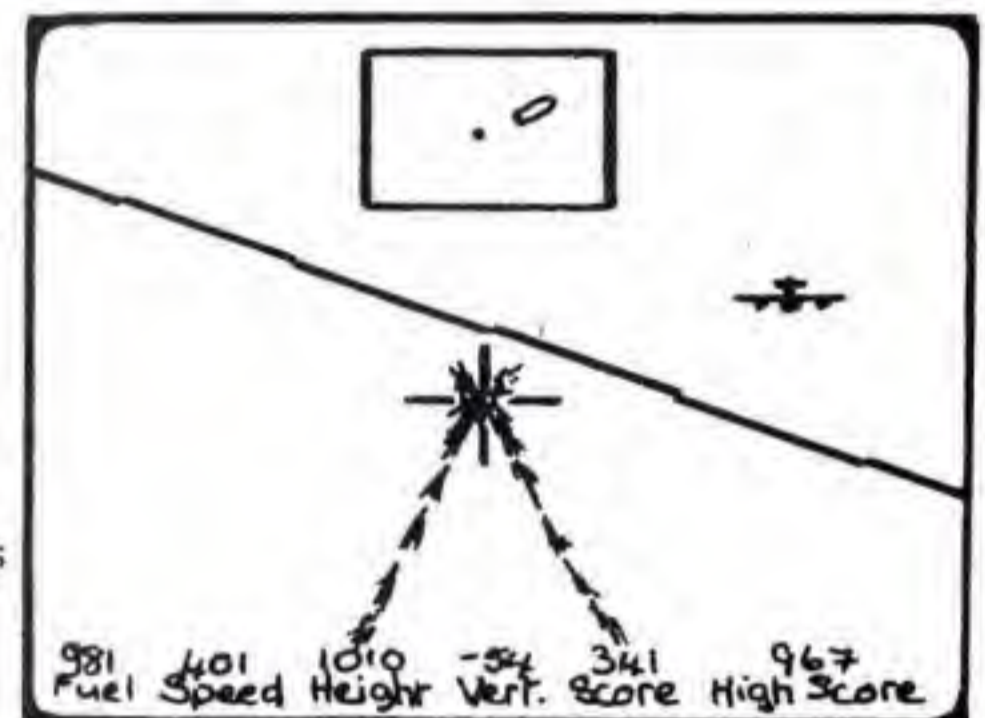
Further information includes fuel, speed, altitude, rate of climb/decent and score, with a complete score table as well.

As your fuel diminishes, you can actually land your fighter, lowering the undercarriage and getting an accurate view of the runway, with the operation needing good joystick control. You can then refuel, take-off and go into the attack again without any loss of your score.

JOYSTICK ONLY
This program will not operate without a joystick fitted

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The screen below is what you actually see—a true 3D cockpit view with the artificial horizon moving as you make joystick movements, with the enemy moving into your sights to destruct



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NUMBER GAME

THE FIRST THROW of the dice will determine what you need to throw in subsequent turns. If you throw a 7 or an 11 on your first attempt you win immediately and if you throw a 3 or a 12 you lose automatically. If you throw any other number, you must throw that number again before throwing a seven to win.

Number Game was written for the BBC B by Brian Taylor of Chilwell, Nottingham.

```

10 REM DICE
20 MODE7
30 VDU23;8202;0;0;0;
40 CLS
50 PRINT TAB(15,2);CHR#141;CHR#130;"DICE"
60 PRINT TAB(15,3);CHR#141;CHR#131;"DICE"
70 PRINT TAB(2,6);CHR#130;"The first throw on the dice will"
CHR#130;"determine what you need
to throw the"CHR#130;"second t
ime. But if you throw a 3 or 12"
CHR#130;"on the first throw you
lose or if you"CHR#130;"throw a
7 or 11 you "
80 PRINT TAB(20,10);CHR#130;"
win. After the first"CHR#130;"thr
ow if you didn't throw any of th
ose"CHR#130;"numbers you have t
o throw the number you"CHR#130;"
got first before you throw anot
her 7."CHR#130;"Simple really"
90 PRINT TAB(6,20);CHR#131;"P
RESS ANY KEY TO CONTINUE"
100 G=GET
110 MODE2
120 VDU23;8202;0;0;0;
130 U=0
140 Z=0
150 D%=0
160 GOSUB 740
170 MODE2;VDU23;8202;0;0;0;
180 CLS

```

```

190 A=350;B=153;C=511;D=306;E=
664;L=1023;K=258;L=153;M=306;N=5
11
200
210 GOSUB 600
220 A=A+665;B=B+665;C=C+665;D=
D+665
230 GOSUB 600
240 COLOUR 2
250 A%=RND(6)
260 B%=RND(6)
270 PRINT TAB(5,15);A%
280 IF A%>1 THEN Q=A%-1 ELSE Q
=A%+1
290 IF A%>4 THEN P=A%-3 ELSE P
=A%+2
300 PRINT TAB(4,21);Q
310 PRINT TAB(6,21);P
320 PRINT TAB(15,15);B%
330 IF B%>1 THEN Q%=B%-1 ELSE
Q%=B%+1
340 IF B%>4 THEN P%=B%-3 ELSE
P%=B%+2
350 PRINT TAB(14,21);Q%
360 PRINT TAB(17,21);P%
370 IF Z=0 THEN I%=A%+B%
380 IF A%+B%=7 AND Z=0 THEN 47
0
390 IF A%+B%=11 AND Z=0 THEN 4
70
400 IF A%+B%=12 AND Z=0 THEN 5
50
410 IF A%+B%=3 AND Z=0 THEN 55
0
420 PRINT TAB(5,3)"YOU NEED ";
I%
430 IF A%+Q%=U THEN GOTO 470
440 IF Z=1 AND A%+B%=7 THEN GO
TO 550
450 IF Z=0 THEN U=A%+B%
460 Z=1;GOTO 530
470 FOR T=1 TO 25

```

```

480 SOUND1,-15,T*10,1
490 NEXT
500 PRINT TAB(7,28)"YOU WIN"
510 G=GET
520 GOTO 130
530 G=GET
540 GOTO 160
550 FOR T=1 TO 2000;NEXT T
560 SOUND 1,-15,1,20
570 PRINT TAB(7,28)"YOU LOSE"
580 G=GET
590 GOTO 130
600 MOVE A,L
610 SOUND1,-11,C,2
620 GCOLOR,1
630 DRAW C,M
640 DRAW C,N
650 DRAW D,F
660 DRAW B,N
670 DRAW B,M
680 DRAW A,L
690 DRAW A,K
700 DRAW B,N
710 MOVE A,K
720 DRAW C,N
730 RETURN
740 MODE2;VDU23;8202;0;0;0;
750 RESTORE
760 VDU24,150;250;1100;770;
770 GCOLOR,129
780 CLG
790 D%=D%+1
800 VDU24,195;290;1000;735;
810 GCOLOR,130
820 CLG
830 PRINT TAB(7,3)"THROW";D%
840 VDU 23,240,56,56,56,0,0,56
56,56
850 READ V,P
860 SOUND3,-5,V+50,2
870 IF V=0 THEN 960
880 COLOUR 1;COLOUR 130
890 PRINT TAB(V,P);CHR#240
900 IF V=3 AND P=14 OR V=8 AND
P=9 THEN SOUND1,-15,200,1
910 IF V=8 AND P=13 THEN 950
920 Y=V;UX=P
930 FOR U=1 TO 200;NEXT
940 PRINT TAB(Y,UX);" "
950 GOTO 850
960 FOR W=1 TO 1000;NEXT
970 RETURN
980 DATA 16,14,15,14,14,14,19,
14,12,14,11,14,10,14,9,14,8,14,7,
14,6,14,5,14,4,14,3,14,4,13,5,1
2,6,11,7,10,8,9,8,10,8,11,8,12,8
,13,6,0

```




```

90 INPUT "Multiplicand: " N#
100 IF VAL N# = 0 GOTO 90
110 INPUT "Multiplier: " D#
120 IF VAL D# = 0 GOTO 110
130 MAXL% = 39
140 DIM ANS$(MAXL%), UNDER%(MAXL%
%)
150 ANS$(0) = STRING$(MAXL% - LEN N#
, " ") + N#
160 ANS$(1) = STRING$(MAXL% - LEN D#
, " ") + D#
170 T% = INSTR(N#, ".") : IF T% N# = L
EFT$(N#, T% - 1) + MID$(N#, T% + 1) : T% = L
ENN# - T% + 1
180 B% = INSTR(D#, ".") : IF B% D# = L
EFT$(D#, B% - 1) + MID$(D#, B% + 1) : B% = L
END# - B% + 1
190 D% = B% + T%
200 O% = MAXL% - D%
210 PROC MULT
220 PROC PRINT
230 END
240 DEF PROC MULT
250 LC% = 1
260 POW% = LEN D#
270 FOR PD% = 1 TO LEN D#
280 LC% = LC% + 1
290 POW% = POW% - 1
300 IF MID$(D#, PD%, 1) = "." GOTO
410
310 TEMP# = ""
320 S% = 0
330 FOR I% = LEN N# TO 1 STEP -1
340 S% = S% + VAL(MID$(N#, PD%, 1)) * V
AL(MID$(N#, I%, 1))
350 TEMP# = STR$(S% MOD 10) + TEMP#
360 S% = S% DIV 10
370 NEXT I%
380 IF S% TEMP# = STR$(S% MOD 10)
+ TEMP# : S% = S% DIV 10 : GOTO 300
390 ANS$(LC%) = STRING$(MAXL% - LEN
TEMP#, " ") + TEMP#
400 IF POW% ANS$(LC%) = MID$(ANS#
(LC%), POW% + 1) + STRING$(POW%, "0")
410 NEXT PD%
420 ANS$(LC% + 1) = STRING$(MAXL%, "
")
430 S% = 0
440 FOR I% = MAXL% TO 1 STEP -1
450 SP% = TRUE
460 S% = S% DIV 10
470 FOR J% = 2 TO LC%

```

LONG MULTIPLICATION takes the hard work out of lengthy arithmetic exercises when you need to show your working. The program asks for two numbers and then multiplies them, setting-out the answer neatly in the manner commonly taught in schools.

Long Multiplication was written for the BBC B or Electron by Derek Chown of Wimborne, Dorset.

Long Multiplication

```

480 IF MID$(ANS$(J%), I%, 1) <> " "
SP% = FALSE : S% = S% + VAL(MID$(ANS$(J
%), I%, 1))
490 NEXT J%
500 IF SP% IF S% = 0 S% = I% - 1 : I% = 1
GOTO 520
510 ANS$(LC% + 1) = LEFT$(ANS$(LC% +
1), I% - 1) + STR$(S% MOD 10) + MID$(AN
S$(LC% + 1), I% + 1)
520 NEXT I%
530 IF T% = 0 IF B% = 0 GOTO 570
540 FOR I% = 2 TO LC% + 1
550 IF MID$(ANS$(I%), D%, 1) <> " "
ANS$(I%) = MID$(ANS$(I%), 2, D% - 1) +
"." + MID$(ANS$(I%), D% + 1)
560 NEXT I%
570 ANS$(1) = LEFT$(ANS$(1), S%) + M
ID$(ANS$(1), S% + 1) : UNDER%(1) = S% + 1
580 ANS$(LC%) = LEFT$(ANS$(LC%), S
%) + MID$(ANS$(LC%), S% + 1) : UNDER%(L
C%) = S% + 1
590 ANS$(LC% + 1) = LEFT$(ANS$(LC% +
1), S%) + MID$(ANS$(LC% + 1), S% + 1) : UN
DER%(LC% + 1) = S% + 1
600 END PROC
610 DEF PROC PRINT
620 PRINT
630 FOR L% = 0 TO MAXL%
640 IF ANS$(L%) = "" M% = L% : L% = MAX
L%
650 NEXT L%
660 FOR N% = 0 TO M% - 1 : L% = N%
670 REM Leave out the next line
if you normally start multipli
ng from the left
680 IF N% > 1 AND N% < M% - 1 L% = M% - N
%
690 PRINT ANS$(L%)
700 IF UNDER%(N%) = 0 GOTO 730
710 UNDER%(N%) = UNDER%(N%) + (D% <<
MAXL%)
720 PRINT SPC(UNDER%(N%)) STRING
$(MAXL% - UNDER%(N%), "-")
730 NEXT N%
750 END PROC

```



Long Division

THIS PROGRAM asks you for two numbers and then divides the first by the second. It prints both the answer and the working. If there is a remainder, it will be shown at the end of the working. If the program is given numbers after the decimal point, it will answer to the same number of decimal points.

Long Division was written for the BBC B or Electron by Derek Chown of Wimborne, Dorset.

```

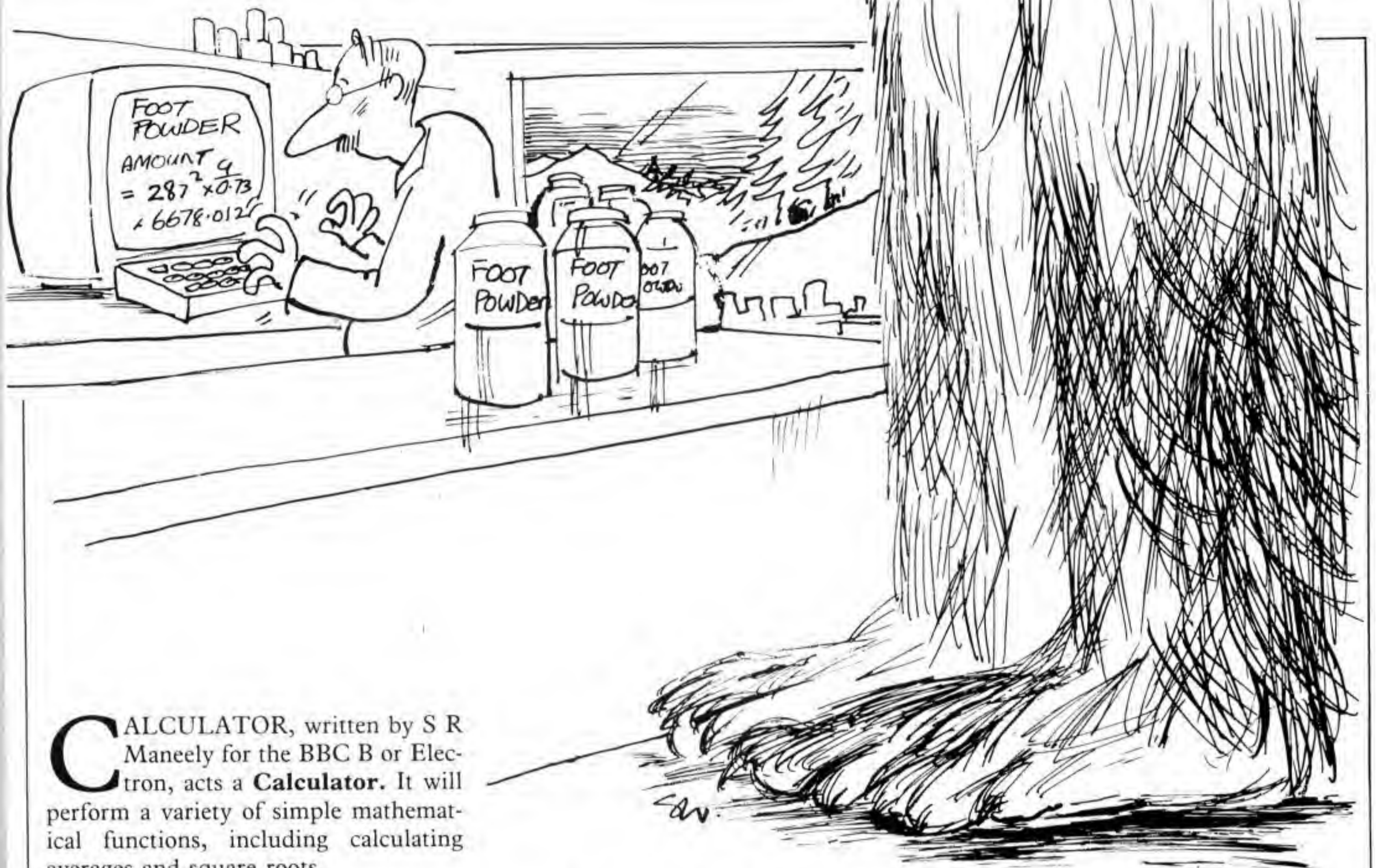
90 INPUT "Dividend (or Numerator): " N$
100 IF VAL N$=0 GOTO 90
110 INPUT "Divisor (or Denominator): " D$
120 IF VAL D$=0 GOTO 110
130 IF RIGHT$(N$,1)=". " N$=N$+"0"
140 IF VAL D$=INT(VAL D$) GOTO 190
150 D$=STR$(10*VAL D$)
160 L%=INSTR(N$,".")
170 IF L% N$=LEFT$(N$,L%-1)+MID$(N$,L%+1,1)+". "+MID$(N$,L%+2) ELSE N$=N$+"0"
180 GOTO 130
190 MAXL%=20
200 DIM ANS$(MAXL%), UNDER%(MAXL%)
210 LGD%=LEND$
220 LGN%=LENN$
230 SIG%=FALSE
240 DP%=INSTR(N$,".")
250 DPOS%=DP%+LGD%
260 ANS$(0)=STRING$(LGD%+1," ")
UNDER%(0)=LGD%+1
270 ANS$(1)=D$+" )" +N$
280 PROC DIVIDE
290 PROC PRINT
300 END
310 DEF PROC DIVIDE
320 POINT%=0
330 CALC%=1
340 TRY$=""
350 REPEAT
360 REPEAT
370 POINT%=POINT%+1
380 IF CALC%>MAXL%-2 POINT%=-1 GOTO 440
390 IF POINT%<LGN% ELSE IF (POINT%-LENSTR$VAL(ANS$(CALC%))<DP%) AND (VALANS$(CALC%)>0) N$=N$+"0"
ANS$(1)=ANS$(1)+"0" ELSE POINT%=-1 GOTO 440
400 IF POINT%<>DP% ELSE IF SIG%

```

```

ANS$(0)=ANS$(0)+". " : POINT%=POINT%+1 ELSE SIG%=TRUE : ANS$(0)=LEFT$(ANS$(0),LENANS$(0)-1)+"0." : POINT%=POINT%+1
410 TRY$=TRY$+MID$(N$,POINT%,1)
420 IF CALC%>2 ANS$(CALC%)=ANS$(CALC%)+MID$(N$,POINT%,1)
430 IF VALTRY$>VALD$ ELSE IF SIG% ANS$(0)=ANS$(0)+"0" ELSE ANS$(0)=ANS$(0)+" "
440 UNTIL VALTRY$>VALD$ OR POINT%=-1
450 SIG%=TRUE
460 IF POINT%=-1 GOTO 550
470 IF DP% PNT%=POINT%+(POINT%>=DP%) ELSE PNT%=POINT%
480 ANS$(0)=ANS$(0)+STR$(VALTRY$)DIV(VALD$)
490 CALC%=CALC%+1
500 TEMP$=STR$(VALTRY$)-(VALTRY$)MOD(VALD$)
510 ANS$(CALC%)=STRING$(LGD%+1+PNT%-LENTMP$, " ") +TEMP$ : UNDER%(CALC%)=LGD%+1+PNT%-LENTMP$
520 CALC%=CALC%+1
530 TRY$=STR$(VALTRY$)MOD(VALD$)
540 ANS$(CALC%)=STRING$(LGD%+1+PNT%-LENTMP$, " ") +TRY$
550 UNTIL POINT%=-1
560 ENDPROC
570 DEF PROC PRINT
580 PRINT
590 FOR L%=0 TO MAXL%
600 IF ANS$(L%)="" L%=MAXL% : GOTO 710
610 IF DP% ELSE GOTO 690
620 IF L%<2 GOTO 690
630 I%=0
640 IF LENANS$(L%)>0 I%=UNDER%(L%)-(UNDER%(L%))>0)
650 IF I% ELSE GOTO 680
660 IF I%>DPOS% UNDER%(L%)=UNDER%(L%)+1 : ANS$(L%)=" "+ANS$(L%) ELSE IF LENANS$(L%)>=DPOS% ANS$(L%)=LEFT$(ANS$(L%),DPOS%)+". "+MID$(ANS$(L%),DPOS%+1)
670 GOTO 690
680 IF LENANS$(L%)<DPOS% ELSE IF MID$(ANS$(L%),DPOS%,1)="" ANS$(L%)=LEFT$(ANS$(L%),DPOS%)+". "+MID$(ANS$(L%),DPOS%+1) ELSE ANS$(L%)=LEFT$(ANS$(L%),DPOS%)+". "+MID$(ANS$(L%),DPOS%+1)
690 PRINT ANS$(L%)
700 IF UNDER%(L%) PRINT STRING$(UNDER%(L%), " ") : STRING$(LEN(ANS$(L%))-UNDER%(L%), "-")
710 NEXT L%
720 ENDPROC

```

CALCULATOR, written by S R Maneely for the BBC B or Electron, acts a **Calculator**. It will perform a variety of simple mathematical functions, including calculating averages and square roots.

CALCULATOR

```

10MODE 6
20 COLOUR 5
30 REM (c) Copyright of U.R.
Maneely
40PRINT:PRINT:PRINT:PRINT
50 PRINT TAB(10)"PRESS S TO S
TART"
60 INPUT Z$
70 IF Z$="S" THEN GOTO 80 ELSE
GOTO 20
80MODE 2
90 FOR X=1 TO 17
100 FOR U = 1 TO 10
110 LET W=U*X*U
120 NEXT U
130 COLOUR X
140PRINT TAB(4)"CALCULATOR"
150 NEXT X
160PRINT:PRINT
170MODE 6
180 PRINT:PRINT:PRINT:PRINT
190PRINT TAB(5)" THIS PROGRAM
TAKES THE FORM OF A PCKET CALC
ULATOR. "
200PRINT TAB(5)" TYPE IN THE N
UMBER OF THE FUNCTION YOU REQUIR
E. "
210PRINT:PRINT:PRINT
220 PRINT TAB(10)"PRESS B TO B
EGIN"
230 INPUT A#
240IF A#="B" THEN GOTO 250 ELS
E GOTO 190
250CLS
260 *TV 255
270 PRINT:PRINT:PRINT:PRINT:PR
INT
280 PRINT TAB(5)"WHICH NUMBER
DO YOU WISH?"
290 PRINT:PRINT:PRINT
300 PRINT TAB(5) "1 ADD
2 SUBTRACT"
310 PRINT TAB(5) "3 MULTIPLY
4 DIVIDE "
320 PRINT TAB(5) "5 SQUARE
6 SQUARE ROOT "
330 PRINT TAB(5) "7 AVERAGES"
340 INPUT B
350 *TV255
360IF B=1 THEN GOTO 440
370IF B=2 THEN GOTO 480
380IF B=3 THEN GOTO 520
390IF B=4 THEN GOTO 560
400IF B=5 THEN GOTO 600
410IF B=6 THEN GOTO 640
420IF B=7 THEN GOTO 680
430IF B=8 THEN GOTO 760
440INPUT "ENTER TWO NUMBERS TO
BE ADDED ",L,D
450LET E=C+D
460PRINT C)" PLUS "D)" IS "E
470GOTO 740
480INPUT "ENTER TWO NUMBERS TO
BE SUBTRACTED ",F,G
490LET H=F-G
500 PRINT F)" MINUS "G)" IS "
H
510GOTO 740
520INPUT "ENTER TWO NUMBERS TO
BE MULTIPLIED ",I,J
530LET K=I*J
540PRINT I)" MULTIPLIED BY "J
" IS "K
550GOTO 740
560INPUT "ENTER TWO NUMBERS TO
BE DIVIDED ",L,M
570LET N=L/M
580PRINT L)" DIVIDED BY "M)"
IS "N
590GOTO740
600INPUT "ENTER NUMBER TO BE S
QUARED ",O
610LET P=O*O
620PRINT O)" SQUARED IS "P
630 GOTO 740
640INPUT "ENTER NUMBER OF WHIC
H THE SQUARE ROOT MUST BE FOUND
",Q
650LET R=SQR(Q)
660PRINT "THE SQUARE ROOT OF "
Q)" IS "R
670GOTO 740
680S=0:T=0
690INPUT " ENTER NUMBERS, LAST
ONE MUST BE 999 ",U
700IF U=999 THEN GOTO 730
710LET S=S+U:LET T=T+1
720GOTO 690
730PRINT " THE AVERAGE IS "S/T
T
740INPUT " DO YOU WISH TO DO A
NOTHER CALCULATION Y/N ",V$
750IF V$="Y" THEN GOTO 250 ELS
E GOTO 760
760 END

```



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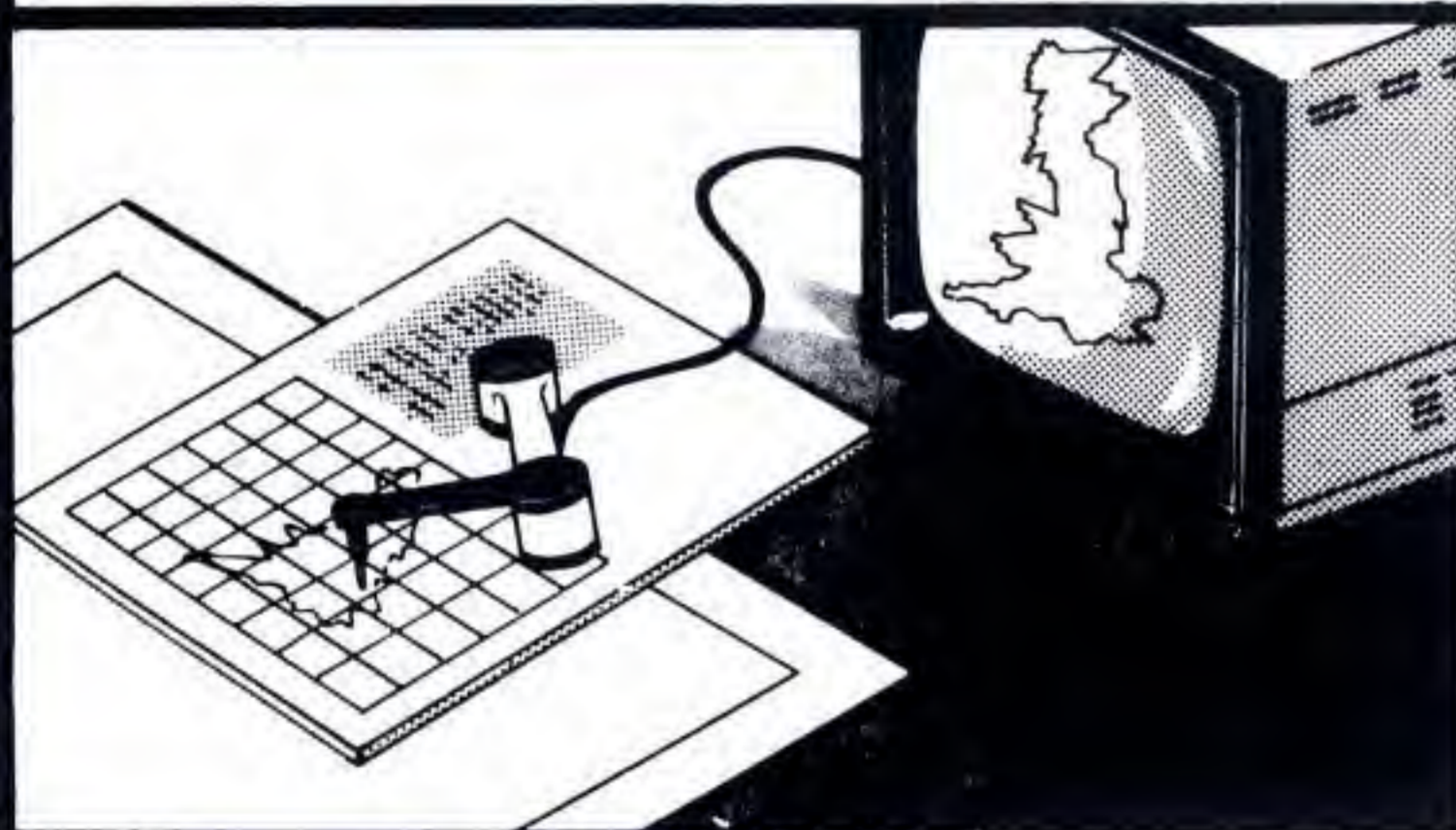
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```

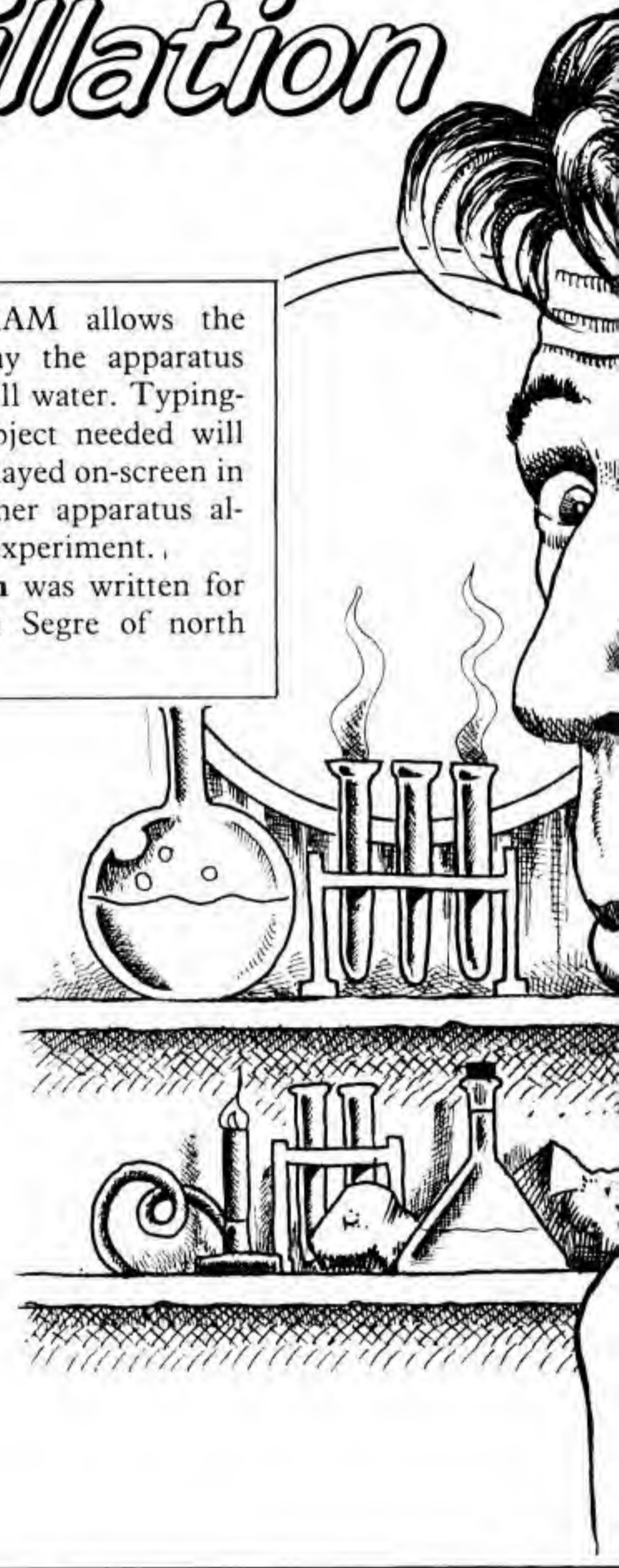
5 A=0:B=0:C=0:D=0:E=0:F=0
10 MODE 7
11 VDU 23;8202;0;0;0;
12 PROCtitle
13 MODE 1
15 RESTORE 500
16 IF A+B+C+D+E+F<>6 THEN GOTO 10
17 FOR T=0 TO 2000:NEXT
18 MODE 7:PROCcongratulations
19 RUN
20 INPUT"Enter a piece of apparatus"
30 INPUT APP$
32 PRINTTAB(0,0);"
35 FOR N=1000 TO 1500 STEP 10
40 READ D$
50 IF APP$=D$ THEN SOUND 1,-1
5,150,2:GOTO N
60 NEXT N
63 SOUND 0,-15,50,2
65 GOTO 15
500 DATA BUNSEN BURNER,CORK,FLASK,CONDENSER,TRIPOD,BEAKER
600 END
1000 REM bunsen burner
1010 MOVE 200,350
1020 DRAW 200,230
1030 DRAW 140,220
1035 DRAW 140,200
1040 DRAW 280,200
1050 MOVE 220,350
1060 DRAW 220,260
1062 DRAW 240,260
1064 MOVE 240,245
1065 DRAW 220,245
1066 DRAW 220,230
1070 DRAW 280,220
1080 DRAW 280,200
1085 A=1
1090 GOTO 15
1100 REM cork
1110 FOR X=565 TO 580
1120 MOVE 195,X
1130 DRAW 225,X
1140 NEXT
1145 B=1
1150 GOTO 15
1200 REM flask
1210 MOVE 195,500
1220 DRAW 195,500
1230 DRAW 130,410
1240 MOVE 225,500
1250 DRAW 225,550
1252 DRAW 250,543
1254 MOVE 250,520
1256 DRAW 225,530
1258 DRAW 225,500

```

Water Distillation

THIS PROGRAM allows the user to display the apparatus needed to distill water. Typing in the name of an object needed will result in its being displayed on-screen in correct relation to other apparatus already chosen for the experiment.

Water Distillation was written for the BBC B by Alex Segre of north London.



```

1260 DRAW 290,410
1270 DRAW 130,410
1280 C=1
1295 GOTO 15
1300 REM condenser
1310 MOVE 250,543
1320 DRAW 280,550
1340 DRAW 650,400
1350 DRAW 675,375
1355 DRAW 730,350
1360 MOVE 250,520
1365 DRAW 260,495
1370 DRAW 625,345
1375 DRAW 655,357
1380 DRAW 726,327
1390 D=1
1395 GOTO 15

```




```

1400 REM tr1 Pod
1410 MOVE 100,200
1420 DRAW 140,300
1430 DRAW 220,300
1440 DRAW 320,200
1450 DRAW 340,200
1455 DRAW 300,300
1460 DRAW 320,300
1465 DRAW 320,400
1470 DRAW 100,400
1475 DRAW 100,300
1480 DRAW 120,300
1485 DRAW 80,200
1490 DRAW 100,200
1493 E=1
1495 GOTO 15
1500 REM heaker

```

```

1510 MOVE 800,220
1520 DRAW 800,200
1530 DRAW 700,200
1540 DRAW 700,320
1545 F=1
1550 GOTO 15
2000 DEF PROCtitle
2010 PRINT TAB(8,5);CHR$(141);C
HR$(134);"WATER DISTILLATION";PR
INT TAB(8,6);CHR$(141);CHR$(134)
;"WATER DISTILLATION"
2020 PRINT TAB(3,10);CHR$(131);
"In this program you must type i
n a"
2030 PRINT TAB(0,11);CHR$(131);
"Piece of apparatus used in the"
2040 PRINT TAB(0,12);CHR$(131);
"distillation of water. If you g
et one"
2050 PRINT TAB(0,13);CHR$(131);
"right then a short beep will oc
cur"
2060 PRINT TAB(0,14);CHR$(131);
"and the apparatus will be displ
ayed."
2080 PRINT TAB(3,20);CHR$(129);
CHR$(136);"HIT THE SPACE_BAR TO
START"
2090 G=GET
2100 IF G=32 THEN ENDPROC ELSE
GOTO 2090
3000 DEF PROCcongratulations
3010 RESTORE 3240
3020 VDU 23;8202;0;0;0;
3030 PRINT TAB(7,5);CHR$(141);C
HR$(130);CHR$(136);"CONGRATULATI
ONS";PRINT TAB(7,6);CHR$(141);C
HR$(130);CHR$(136);"CONGRATULATIO
NS"
3040 PRINT TAB(3,9);"YOU HAVE S
UCCEEDED IN OBTAINING"
3050 PRINT TAB(10,10);"PURE WAT
ER!!"
3060 FOR X=1 TO 11
3070 READ P,D
3080 IF P=999 THEN L=0 ELSE L=-
15
3090 SOUND 1,L,P,D
3100 SOUND 1,0,0,3
3110 NEXT
3200 PRINT TAB(0,20);CHR$(129);
CHR$(136);"HIT THE SPACE_BAR FOR
ANOTHER GO"
3210 G=GET
3220 IF G<>32 THEN GOTO 3210
3230 ENDPROC
3240 DATA 97,15,97,5,101,5,999,
5,101,5,97,5,101,10,97,2,89,5,81
,5,77,10

```


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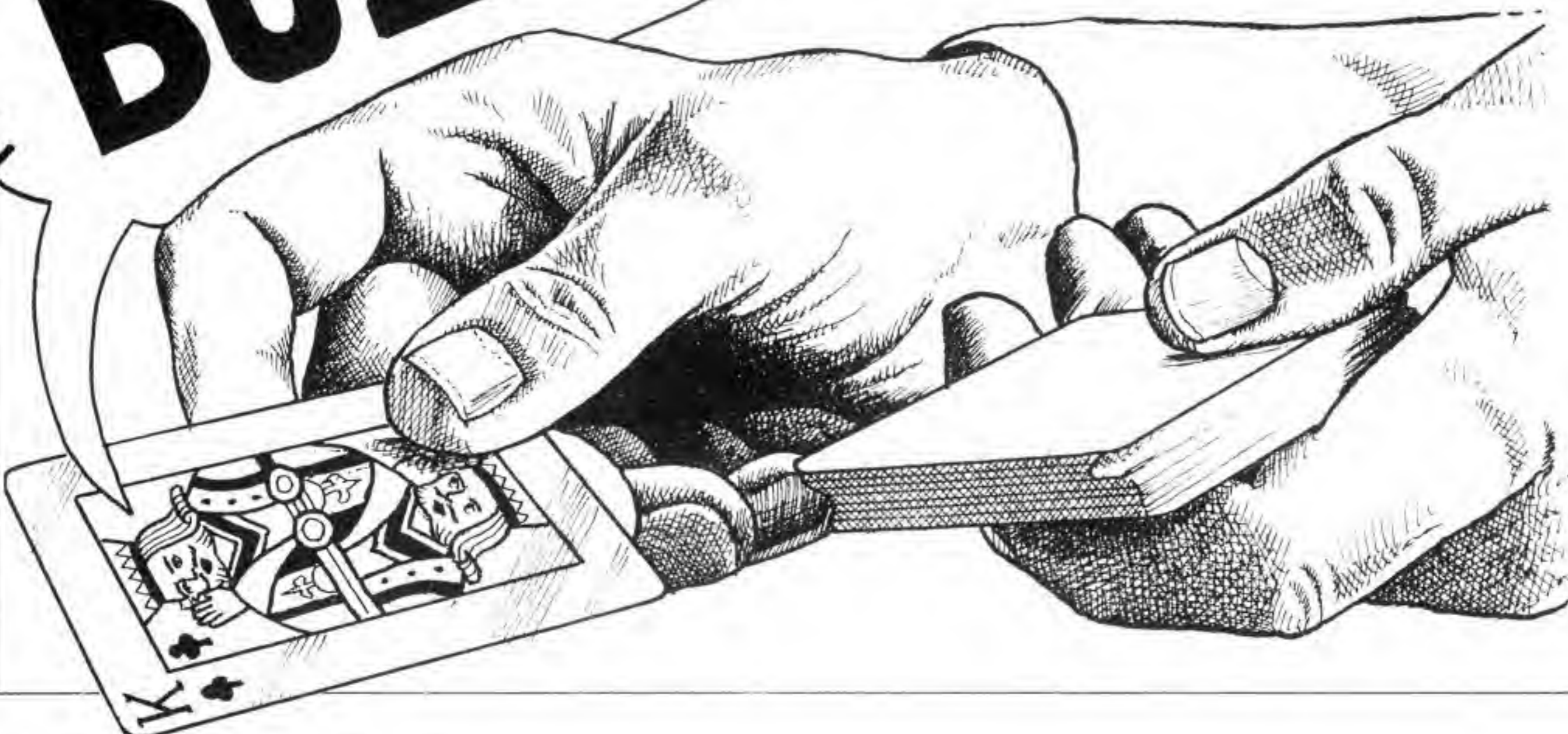
Pontoon

PLAY a traditional game of Pontoon on your BBC B against friends or the computer. The object is to hold cards totalling 21 or the nearest possible lowest figure. A total exceeding 21 will lose automatically or "bust". Take as many cards as is necessary or safe and the computer will make its selection.

```
1 CLS
10 PRINT "HOW MANY PLAYERS?"
20 INPUT B
21 LET A=0
30 DIM C(B)
40 LET D=RND(11)
50 LET A=A+D
60 IF A>21 THEN GOTO 80
70 GOTO 40
80 LET A=A-D
90 FOR E=1 TO B
95 CLS
```

```
100 PRINT "YOUR TURN PLAYER";E
105 PRINT
110 IF C(E-1)>21 THEN PRINT "P
LAYER";E-1;" HAS GONE BUST"
115 LET F=RND(10)
120 IF F=1 THEN GOSUB 260
125 LET C(E)=C(E)+F
130 PRINT
135 PRINTTAB(8)"==="
140 PRINT
145 PRINT C(E)
150 PRINTTAB(8)"==="
155 PRINT
160 IF C(E)>21 THEN GOTO 185
165PRINT "ANOTHER CARD?<Y OR N
)"
170 INPUT G$
175 CLS
180 IF G$="Y" THEN GOTO 115
185 NEXT E
190 CLS
200 FOR E=1 TO B
201 IF C(E)>21 THEN PRINT "PLAY
ER ";E;"BUST"
205 IF C(E)<22 THEN PRINT "PLA
YER ";E;"SCORED ";C(E)
210PRINT
215 NEXT E
220 PRINT "THE COMPUTER HAS ";A
225 PRINT
230PRINT "ANOTHER GAME? Y/N"
235 INPUT H$
240 CLS
245 IF H$="Y" THEN RUN
250 END
260 PRINT "ACE=1 OR 11?"
265 INPUT Z
270 LET F=Z
275 RETURN
```

BUST!



Bank Robber

BREAK into your local bank and steal as much money as possible. Vicious guard dogs and brutal guards will reduce your strength and shoot at you, but bags of money can be found in the vaults. The aim is to leave alive with as much money as possible. For the BBC B and Electron.

```

10 CLS
20 LET P=RND(14)
30 LET V=0
40 LET A=RND(20)
50 LET B=RND(15)
55 PRINTTAB(6)"BANK ROBBER"

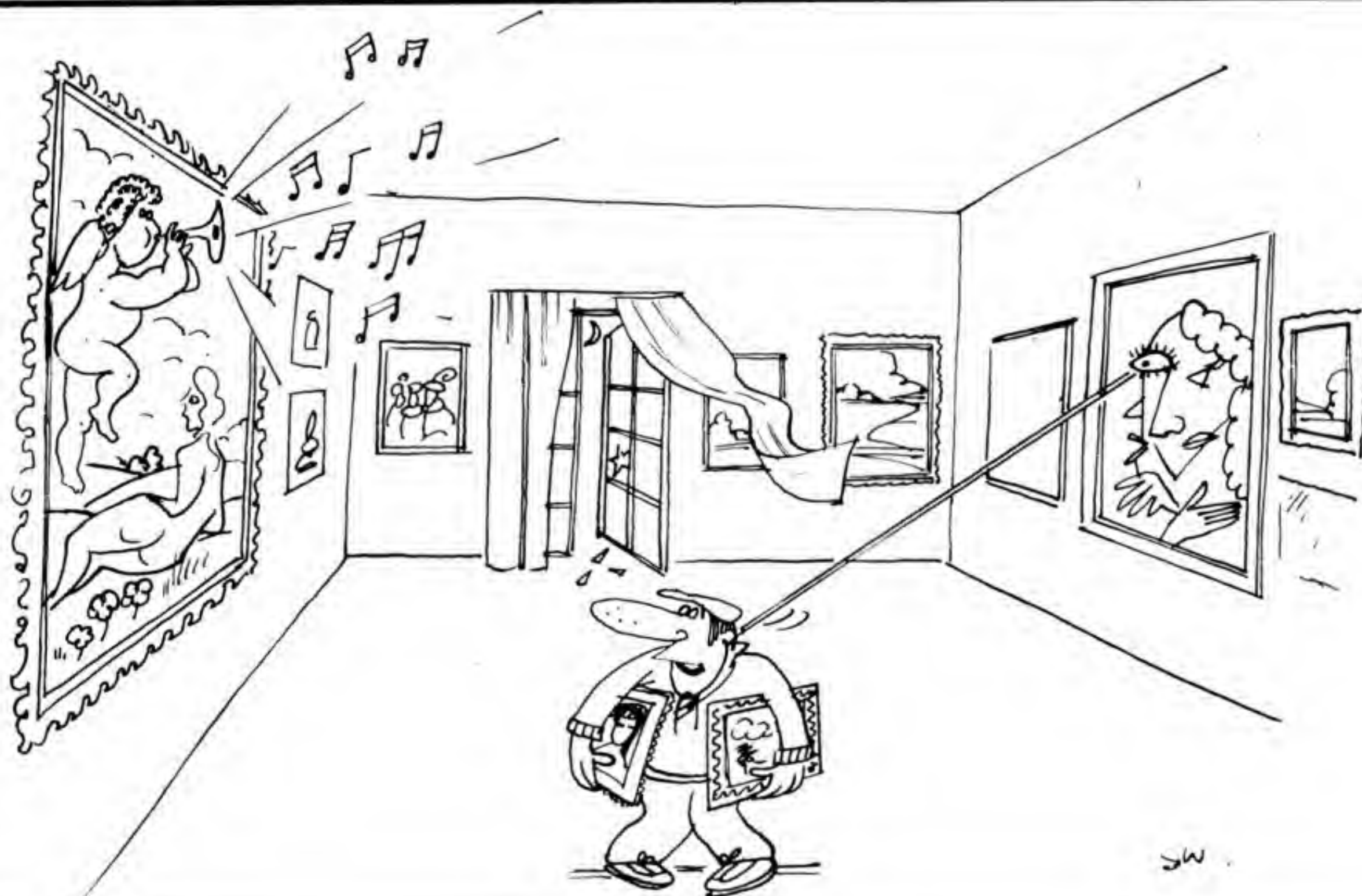
60 PRINT "POWER=";P;" STRENGTH
OF BULLET PROOF VEST";A;" BODY
HITS";B;" LOOT=";V
70 PRINTTAB(6)"BANK ROBBER"
80 PRINT"THE BANK IS VERY DARK.
YOU CAN HARDLY SEE"
90 PRINT
100 PRINT "WILL YOU ENTER THE
SAFE?"
110 INPUT A$
120 IF A$="N" THEN GOTO 70
140 LET P=RND(3)

```

```

145 LET X=RND(60)
150 IF P=0 THEN GOTO 150
160 IF P=1 THEN GOTO 220
170 IF P=2 THEN GOTO 240
180 LET E=RND(12)
190 IF P>E THEN PRINT"YOU KILLED
TWO VICIOUS GUARD DOGS"
200 IF P<E THEN LET P=P-4:PRINT
"BITTEN BY GUARD DOGS. LOSE 4
POINTS"
210 GOTO 300
220 PRINT"NO GUARDS HERE..YOUR
POWER INCREASES"·LET P=P+1
225 LET P=P+1
230 GOTO 290
240 PRINT"SHOT AT BY GUARDS.
LOSE 7 HITS"
250 IF A=0 THEN LET B=B-7
260 IF A>0 THEN LET A=A-7
270 IF A<0 THEN LET A=0
280 GOTO 300
290 PRINT"YOU FIND A BAG OF
BANKNOTES"·LET V=V+100
300 IF B<=0 THEN PRINT "YOU ARE
DEAD"·END
310 PRINT"WILL YOU GO FURTHER?"
"
320 INPUT S$
330 CLS
335 PRINT "POWER=";P;" STRENGTH
OF BULLET PROOF VEST";A;" BODY
HITS";B;" LOOT=";V
338 IF X=32 THEN GOTO 360
340 IF S$="Y" THEN GOTO 140
350 PRINT "YOU ARE AT THE
ENTRANCE"
360 END

```



Typing Practice

TEST your touch typing with **Typing Practice** for the BBC or Electron. Letters will be displayed briefly on-screen. Type the same letter before it disappears to gain a point. After 20 letters have been displayed, your score will be given.

```
5 CLS
10 PRINT "PRESS THE LETTER SHOWN TO SCORE A POINT."
15 FOR V=1 TO 10000
16 NEXT V
20 LET S=0
30 REM LOOP WHICH RUNS THE ROUTINE 20 TIMES
40 FOR A=1 TO 20
50 LET M=RND(26)
60 LET M=M+64
70 LET M%=CHR$(M)
80 PRINT M%
90 LET N%=INKEY$(160)
100 IF N%=M% THEN LET S=S+1
110 CLS
120 NEXT A
130 PRINT "YOU HAVE NOW HAD 20 TURNS. YOUR SCORE IS NOW ";S
140 FOR V=1 TO 10000
150 NEXT V
160 RUN
```

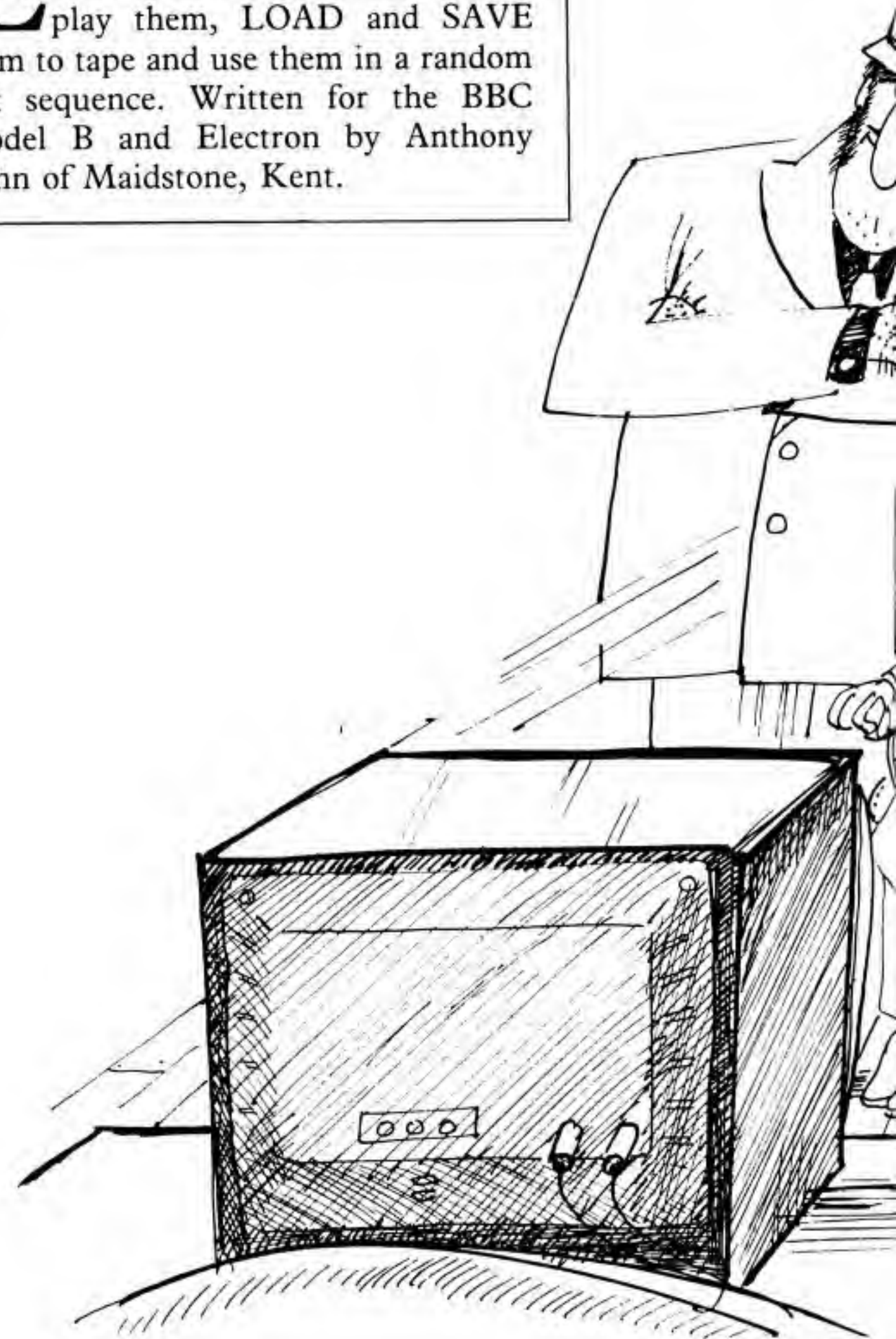



```

10 ON ERROR CLS:GOTO 60
20 REM ***QUESTION MASTER***
30 REM *****1982*****
40 REM ***BY ANTHONY CHAN***
50 CLS
60 PRINT TAB(10);STRING$(15,"
*")
70 PRINT TAB(10);"QUESTION MA
STER"
80 PRINT TAB(10);STRING$(15,"
*")
90 PRINT"Select an option:-"
100 PRINT'TAB(5)"1. Display qu
estions"
110 PRINT'TAB(5)"2. Random tes
t"
120 PRINT'TAB(5)"3. Enter test
questions"
130 PRINT'TAB(5)"4. Change a t
est question"
140 PRINT'TAB(5)"5. Load data
from a cassette"
150 PRINT'TAB(5)"6. Save data
onto a cassette"
155 PRINT'TAB(5)"7. Catalogue"
160 A#=GET$:IF VAL(A#)<1 OR VA
L(A#)>7 THEN 160
170 CLS
180 ON VAL(A#) GOTO 190,300,44
0,580,630,780,892
190 PRINT TAB(9);STRING$(9,"*")
)
200 PRINT TAB(10);"DISPLAY"
210 PRINT TAB(9);STRING$(9,"*")
)
220 VDU 14
230 FOR A=1 TO X
240 PRINT'TAB(5);A;"");TAB(8);
Q$(A)
250 PRINTTAB(8);A$(A)
260 NEXT A
270 VDU 15
280 PROCEND
290 GOTO 60
300 PRINT TAB(9);STRING$(6,"*")
)
310 PRINT TAB(10);"TEST"
320 PRINT TAB(9);STRING$(6,"*")
)
330 FOR A=1 TO X:AC(A)=0:NEXT
340 SC=0
350 FOR B=1 TO X
360 A=INT(RND(X)):IF A(A)=1 TH
EN 360 ELSE A(A)=1
370 PRINT Q$(A)
380 INPUT A$
390 IF A$=A$(A) THEN PRINT"Cor
rect,well done.":SC=SC+1 ELSE PR
INT"Bad luck,it was ";A$(A)

```

EXAMINER allows its user to enter questions and answers, display them, LOAD and SAVE them to tape and use them in a random test sequence. Written for the BBC Model B and Electron by Anthony Cahn of Maidstone, Kent.



```

400 NEXT
410 PRINT"You scored ";SC;" ou
t of ";X
420 PROCEND
430 GOTO 60
440 PRINT'TAB(9)STRING$(17,"*")
)
450 PRINTTAB(10)"ENTER QUESTIO
NS"
460 PRINTTAB(9)STRING$(17,"*")
470 CLEAR
480 INPUT"How many questions"
,X
490 DIM Q$(X),A$(X),AC(X)
500 PRINT"Right then,input que
stions and answers alternately"
510 PRINT"Pressing return inbe
tween"
520 FOR A=1 TO X
530 PRINTTAB(1);A;"");TAB(5);:
INPUT Q$(A)
540 PRINTTAB(5);:INPUTA$(A)
550 NEXT

```




EXAMINER

EXAMINER

EXAMINER

EXAMINER

EXAMINER

EXAMINER

EXAMINER

EXAMINER

```

560 PROCEND
570 GOTO 60
580 INPUT "Which question to be
changed",A
590 PRINT "Right then,input new
question and then answer,return
separating."
600 INPUT Q$(A),A$(A)
610 PROCEND
620 GOTO 60
630 CLEAR
640 INPUT "What is the name of
your file",F$
650 PRINT "Play tape and Press
any key"
660 Q=GET
670 PRINT "Please wait"
680 E%=OPENIN F$
690 INPUT#E%,X
700 DIM Q$(X),A$(X)
710 FOR A=1 TO X
720 INPUT#E%,Q$(A),A$(A)
730 NEXT

```

```

740 CLOSE#E%
750 DIMA(X)
760 PROCEND
770 GOTO 60
780 PRINT "What is the name of
your file?"
790 INPUT F$
800 PRINT "Please Press ";
810 E%=OPENOUT F$
820 PRINT "Please wait"
830 PRINT#E%,X
840 FOR A=1 TO X
850 PRINT#E%,Q$(A),A$(A)
860 NEXT
870 CLOSE#E%
880 PROCEND
890 GOTO 60
892 *CAT
900 DEF PROCEND
910 PRINT TAB(7)"PRESS THE SPA
CE BAR"
920 A$=GET$:IF A$=" " THEN CLS
:ENDPROC ELSE 920

```


IN ORDER

THE COMPUTER will display a square comprising 16 smaller squares. Fifteen of them contain a letter while the other contains a space. The aim is to arrange all the letters in

alphabetical order by moving letters adjacent to the space repeatedly into the space.

In Order was written for the BBC B by Neil Devlin of Dundee, Tayside.

```

1REM          IN-ORDER
2REM          BY NEIL DEVLIN
3REM          6TH DECEMBER 1983

4REM
5IF J% = 0 THEN H% = 10000
6DIM A$(16,2)
7MODE 7
8PROCINTRO
9DIM B$(16):DIM C$(16):REM LET
TERS
10VDU 23;8202;0;0;0:REM CURS
OR OFF
11:
12REM          MAIN PART OF PROGRA
M
13:
14PROCSCREEN:REM POSITIONS ON
SCREEN
15PROC MIX:REM MIX UP LETTERS
16REPEAT
17REPEAT:G=GET:UNTIL G>64 AND
G<80
18PROCINPUT:REM PICK LETTER T
O MOVE
19IF MARKER=0 THEN PROCFALSE:
GOTO17
20PROCCHANGE:REM CHANGE LETTE
RS
21SCORE=SCORE+1
22PROCSCORE
23PROC CHECK:REM CHECK IF END
OF GAME
24UNTIL FALSE
25:
26:
27REM          PRINT LETTERS ON SCREE
N
28PRINTCHR$(134):" " :RETURN
29PRINTCHR$(129):"A" :RETURN
30PRINTCHR$(129):"B" :RETURN
31PRINTCHR$(129):"C" :RETURN
32PRINTCHR$(129):"D" :RETURN
33PRINTCHR$(131):"E" :RETURN
34PRINTCHR$(131):"F" :RETURN
35PRINTCHR$(131):"G" :RETURN
36PRINTCHR$(131):"H" :RETURN
37PRINTCHR$(130):"I" :RETURN
38PRINTCHR$(130):"J" :RETURN
39PRINTCHR$(130):"K" :RETURN
40PRINTCHR$(130):"L" :RETURN
41PRINTCHR$(132):"M" :RETURN
42PRINTCHR$(132):"N" :RETURN
43PRINTCHR$(132):"O" :RETURN
44:
45:
46DEF PROC MIX
47PRINTTAB(1,4):CHR$(136):CHR
$(129):"          IN-ORDER
"
48SCORE=0:FORZ%=1TO16
49Y=RND(16):IF B(Y)=0 THEN GO
TO49
50C(Z%)=B(Y):B(Y)=0:NEXT
51FORZ=1TO16:IF C(Z)=64 THEN
B(Z)=1 ELSE NEXT
52FORZ=1TO16:PRINTTAB((A(Z,1)
):(A(Z,2))):GOSUB(C(Z)-36):NEXT
53PRINTTAB(6,3):"SCORE":TAB(8
,5):"0"
54PRINTTAB(20,3):"BEST SCORE"
):IF H%>10 THEN PRINTTAB(31,5):H
% ELSE PRINTTAB(30,6):H%
55ENDPROC
56:
57:
58DEF PROC SCREEN
59PRINTTAB(1,4):CHR$(130):"TH
IS IS HOW IT SHOULD BE FINISHED"
:K=12

```



```

60FORZ=1TO4:AC(Z,1)=X:X=X+4:AC
Z,2)=10:NEXT X=12
61FORZ=5TO8:AC(Z,1)=X:X=X+4:AC
Z,2)=13:NEXT X=12
62FORZ=9TO12:AC(Z,1)=X:X=X+4:A
C(Z,2)=16:NEXT X=12
63FORZ=13TO16:AC(Z,1)=X:X=X+4:
AC(Z,2)=19:NEXT
64X=65:FORY=1TO15:B(Y)=X:X=X+
1:NEXT
65B(16)=64
66FORZ=1TO15:PRINTTAB(A(Z,1)
),(A(Z,2)):GOSUB(B(Z)-36):NEXT
67PRINTTAB(4,22);CHR$(136);CH
R$(129);"PRESS SPACE BAR TO STAR
T":REPEAT:UNTIL GET=32:PRINTTAB(
6,22);"

```

```

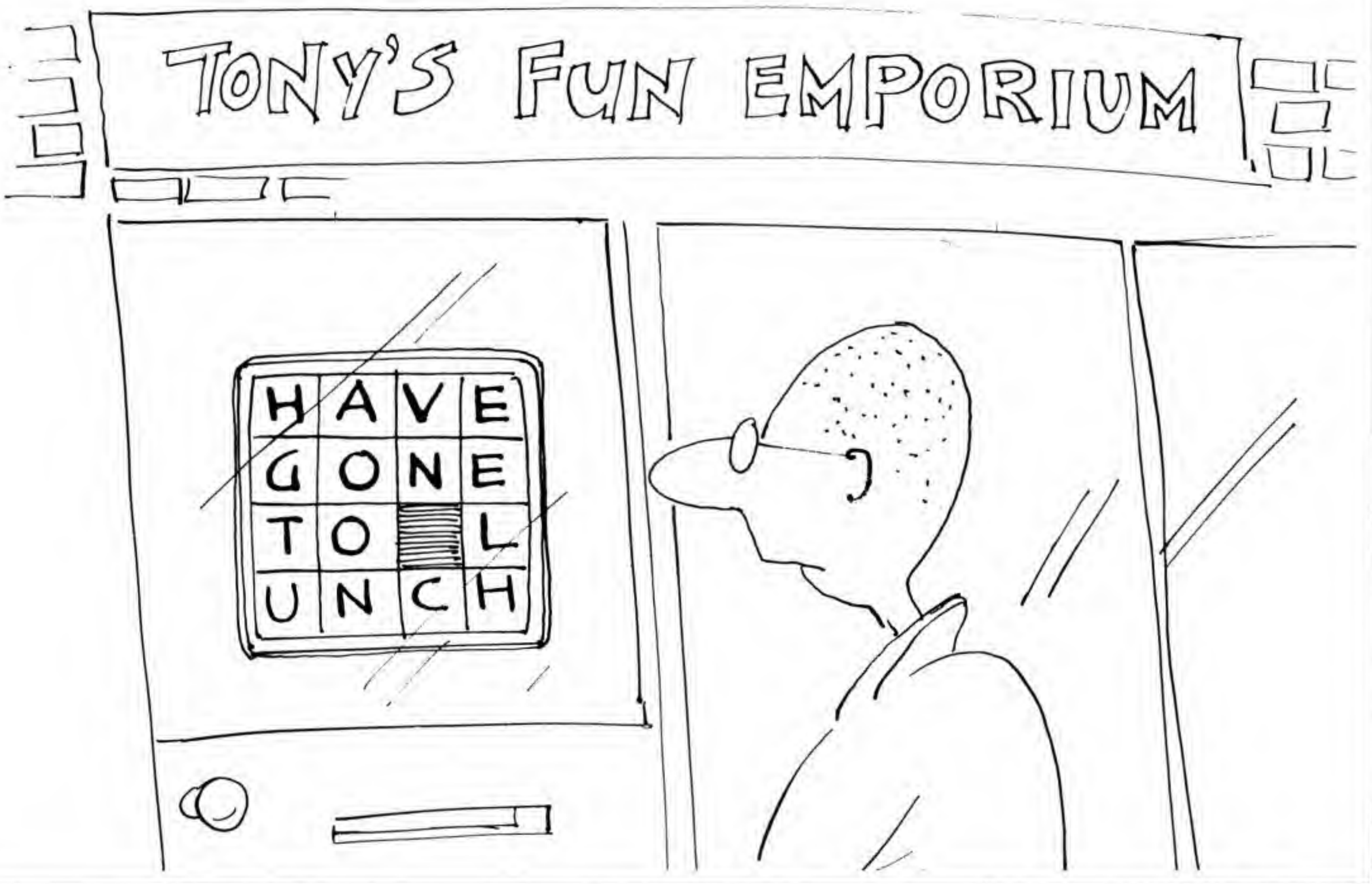
16 THEN GOTO81
80IF C(Z)=G AND B(Z+1)=1 THEN
MARKER=1:W=Z:V=2:Z=16:GOTO 87
81REM LEFT
82IF Z=1 OR Z=5 OR Z=9 OR Z=1
3 THEN GOTO 84
83IF C(Z)=G AND B(Z-1)=1 THEN
MARKER=1:W=Z:V=3:Z=16:GOTO 87
84REM UP
85IF Z<5 THEN GOTO87
86IF C(Z)=G AND B(Z-4)=1 THEN
MARKER=1:W=Z:V=4:Z=16
87UNTIL Z=16
88ENDPROC
89:
90:
91DEF PROCCHANGE
92REM CHANGE LETTERS AROUND
93REM AND PRINT THEM ON SCREE
N
94IF V=4 THEN C(W-4)=C(W):C(W
)=64:B(W-4)=0:B(W)=1:PRINTTAB(A(
(W-4),1),A((W-4),2)):GOSUB(C(W-
4)-36):PRINTTAB(A((W),1),(A((W),
2)):GOSUB(C(W)-36)
95IF V=3 THEN C(W-1)=C(W):C(W
)=64:B(W-1)=0:B(W)=1:PRINTTAB(A(
(W-1),1),A((W-1),2)):GOSUB(C(W-
1)-36):PRINTTAB(A((W),1),(A((W),
2)):GOSUB(C(W)-36)
96IF V=2 THEN C(W+1)=C(W):C(W

```

```

68ENDPROC
69:
70:
71DEF PROCINPUT
72REM MAKE SURE INPUT IS VALI
D
73MARKER=0:Z=0
74REPEAT:Z=Z+1
75REM DOWN
76IF Z>12 THEN GOTO78
77IF C(Z)=G AND B(Z+4)=1 THEN
MARKER=1:W=Z:V=1:Z=16:GOTO 87
78REM RIGHT
79IF Z=4 OR Z=8 OR Z=12 OR Z=

```




```

)=64:B(W+1)=0:B(W)=1:PRINTTAB(A(
(W+1),1),A(W+1),2)):GOSUB(C(W+
1)-36):PRINTTAB(A(W),1),(A(W),
2)):GOSUB(C(W)-36)
97IF V=1 THEN C(W+4)=C(W):C(W
)=64:B(W+4)=0:B(W)=1:PRINTTAB(A(
(W+4),1),A(W+4),2)):GOSUB(C(W+
4)-36):PRINTTAB(A(W),1),(A(W),
2)):GOSUB(C(W)-36)
98ENDPROC
99:
100:
101DEF PROCFALSE
102REM WRONG INPUT
103SOUND 1,-15,100,10
104PRINTTAB(3,23)"THAT WAS AN
INVALID GUESS,TRY AGAIN"
105FORZ1=1TO5000:NEXT
106FORZ=37 TO 3 STEP-1
107PRINTTAB(2,23)"":NEXT
108SOUND 1,-15,100,3
109ENDPROC
110:
111:
112DEF PROCSCORE
113REM PRINT SCORE
114IF SCORE<10 PRINTTAB(8,5)"S
CORE ELSE PRINTTAB(7,5)"SCORE
115ENDPROC
116:
117:
118DEF PROCHECK
119K=65
120FORA%=1TO15
121IF C(A%)=K THEN K=K+1
122NEXT
123IF K<>80 THEN ENDPROC
124ENVELOPE 1,1,-26,-36,-45,25
5,255,255,127,0,0,-127,126,0
125SOUND 1,1,255,155
126C=INKEY(800):J%=1
127IF SCORE=H% THEN SCORE=1:GO
TO129
128IF SCORE<H% THEN H%=SCORE:S
CORE=0
129CLS
130VDU 23;B202;0;0;0:REM CURS
OR OFF
131PRINTTAB(14,10)CHR(129)"
WELL DONE!"
132IF SCORE=0 THEN PRINT"";CH
R(130);TAB(3)"YOU MANAGED TO G
ET THE BEST SCORE":GOTO134
133IF SCORE=1 THEN PRINT"";CH
R(130);TAB(7)"YOU EQUAL THE BE
ST SCORE" ELSE PRINT"";CHR(130);
TAB(18)"BUT"";CHR(130)"YOU
WERE ";SCORE-H%" POINTS OFF THE
BEST SCORE"
134PRINT"";TAB(4)CHR(131)"D
O YOU WANT ANOTHER GAME(Y/N)"

```

```

135REPEAT:G=GET:UNTIL G=89 OR
G=78
136IF G=89 THEN CLS:GOTO10
137CLS:PRINTTAB(14,12)
138PRINTCHR(136)CHR(141);CH
R(131)"BYE!";TAB(14,13)
139PRINTCHR(136)CHR(141);CH
R(131)"BYE!"
140GOTO140
141:
142:
143DEF PROCINTRO
144REM INTRODUCTION & INSTRU
CTIONS
145CLS
146VDU 23;B202;0;0;0:REM CURS
OR OFF
147PRINTTAB(14,10)CHR(131)"
IN-ORDER"
148PRINTTAB(18,12)"BY"
149PRINT"";TAB(13,14)CHR(129)
"NEIL DEVLIN"
150FORZ=1TO5000:NEXT
151CLS
152PRINT"";CHR(129);CHR(157);
CHR(135)" IN-ORDER
"
153PRINT"";TAB(11)CHR(131)"
* INSTRUCTIONS *"
154PRINT"";CHR(134)"RE-ARRAN
GE THE LETTERS IN ALPHABETICAL"
155PRINTCHR(134)"ORDER, BY PR
ESSING THE LETTER YOU WANT"
156PRINTCHR(134)"TO MOVE INT
O THE SPACE, THE LOWEST SCORE"
157PRINTCHR(11);CHR(134)"IS
KEPT ON THE SCREEN, LESS THAN 10
000"
158PRINTCHR(134)"IS YOU'RE T
ARGET, TO BEGIN WITH."
159PRINT"";CHR(132);TAB(12)"Y
OU CAN ONLY MOVE"
160PRINT"";CHR(132)" UP-
DOWN OR LEFT-RIGHT"
161PRINT"";CHR(136);CHR(129)
)" PRESS SPACE BAR TO CONTI
NUE"
162REPEAT:UNTIL GET=32:CLS
163ENDPROC

```



GOLF



PLAY a simple game of **Golf** on your BBC B or Electron. You will be told how many yards you have to play and par for the hole. You can then select a club or a putter to hole

out as quickly as possible. There are nine holes to play and, when you finish, you will be told whether your game was above or below par.

```

10 LET X=0
20 A=1
30 F=0
40 H=0
50 B=0
60 CLS
70 LET D=RND(245)+175
80 LET P=6
90 P=4
100 IF D<276 THEN LET P=3
110 IF D>350 THEN LET P=5
120 PRINT
    
```

```

130 PRINT "HOLE,";A;": ";D;" YARD(S)
    TO PLAY"
140 PRINT
150 PRINT "PAR ";P
160 PRINT
170 IF D<>0 THEN PRINT B;"STRO
    KES PLAYED"
180 IF H<>1 THEN PRINT "CLUB? 5
    TO 9"
190 IF H=1 THEN PRINT "PUTTER? 1
    TO 4"
200 INPUT W
    
```

```

210 CLS
220 T=1
230 IF W=2 THEN LET T=W
240 IF W=3 THEN LET T=RND(2)+4
250 IF W=4 THEN LET T=RND(4)+8
260 IF W=5 THEN LET T=RND(6)+2
0
270 IF W=6 THEN LET T=RND(9)+4
5
280 IF W=7 THEN LET T=RND(8)+9
6
290 IF W=8 THEN LET T=RND(9)+1
35
300 IF W=9 THEN LET T=RND(15)+
195
310 D=D-T
320 PRINT "STROKE,";T;" YARD(S)
"
330 LET B=B+1
340 IF D>-1 THEN GOTO 370
350 LET D=-D
360 PRINT D;"PAST HOLE"
370 IF D=0 THEN GOTO 410
380 IF D<18 AND D>-19 THEN PRI
    NT "ON GREEN"
390 IF D<18 AND D>-19 THEN LET
    H=1
400 GOTO 90
410 IF B>P THEN PRINT "BOGIE ";
    B;"B-P;" OVER"
420 IF B=P THEN PRINT "PAR ";B
430 IF P-1=B THEN PRINT "BIRDIE
    ";B
440 IF P-2=B THEN PRINT "EAGLE
    ";B
450 LET X=X+B
460 LET F=F+P
470 LET A=A+1
480 IF A=10 THEN GOTO 500
490 GOTO 40
500 PRINT "C/PAR ";F
510 PRINT "YOUR SCORE";X
    
```

Errors & Mishaps

PART of a line was omitted from **Colour Logic** in the December/January issue. Line 790 should end with NEXT I, as printed. Line 800 should begin: 800 IF RIGHT > CORRECT AND RIGHT and should continue <> 0 THEN as printed.

Line 730 of **INVASION** in the same issue should end THEN GOTO 50.



Simon's Game

ON THE SCREEN are displayed four coloured sections, each with its own sound and a corresponding cursor key. The computer will flash one of those sections and play the appropriate note. The player must then press the corresponding cursor key. The computer will then play two notes and the two corresponding keys must be pressed in sequence. The number of notes played will increase by one each turn until an error is made by the player, when the score will be displayed.

Simon's Game was written for the BBC B by N Mirza of Edgware, Middlesex.

```

0 ON ERROR GOTO 700
10 REM *****
20 REM **                **
30 REM **          SIMON  **
40 REM **                **
50 REM **          (C)    **
60 REM **                **
70 REM **      N. A. MIRZA **
80 REM **                **
90 REM *****
100 MODE 2
110 *FX4,1
120 ENVELOPE1,1,10,20,-30,30,3
0,30,0,0,0,-1,126,50
130 ENVELOPE2,2,0,0,0,10,10,10
,0,-1,-3,-5,126,70
140 VDU 23,224,&3C18)&FF7E)&18
18)&1818)
150 VDU 23,225,&1818)&1818)&7E
FF)&183C)
160 VDU 23,226,&3010)&FF70)&70
FF)&1030)
170 VDU 23,227,&0C08)&FF0E)&0E
FF)&080C)
180 VDU 23,8202,0,0,0
190 PROCinst
200 PROCDISPLAY
210 P$=""
220 W=INKEY(60)
230 REPEAT
240 P$=P$+CHR$(RND(4)+135)
250 PRINTTAB(1,2)" MY " TAB(14
,2)"TURN"
260 FOR I=1 TO LEN(P$)
270 PROCPLAY(MID$(P$,I,1))
280 NEXT

```

```

290 PRINTTAB(1,2)"YOUR"
300 FOR I=1 TO LEN(P$)
310 G$=GET$:IF ASC(G$)<136 OR
ASC(G$)>139 GOTO 310
320 PROCPLAY(G$)
330 IF G$<>MID$(P$,I,1) GOTO
340 ELSE GOTO 430
340 *FX 15,0
350 IF G$=MID$(P$,I,1) THEN GO
TO430
360 SOUND 1,1,100,10
370 W=INKEY(10):CLS
380 COLOUR 5
390 PRINT TAB(4,4)"You scored
";LEN(P$)-1
400 COLOUR 15
410 PRINTTAB(5,9)"Any key to"
TAB(5,12)"play again"
420 X=GET:RUN
430 NEXT
440 PRINT TAB(9,16);LEN(P$);:F
OR J=1 TO 1000:NEXT
450 UNTIL LEN(P$)=254
460 *FX 15,0
470 PRINT TAB(5,4)"O.K you win
":PRINT TAB(5,7)"Any key to Pla
y
again":X=GET:RUN
480 DEFPROCDISPLAY
490 CLS
500 GCOL 0,1:MOVE 0,512:PLOT 6
9,640,1024:PLOT 85,640,512
510 GCOL 0,2:MOVE 1200,512:PLD
T 69,640,1024:PLOT 85,640,512
520 GCOL 0,3:MOVE 1200,512:PLU
T 69,640,0:PLOT 85,640,512

```

```

530 GCOL 0,4:MOVE 0,512:PLOT 6
9,640,0:PLOT 85,640,512
540 GCOL 0,0:MOVE 480,512:PLOT
69,800,512:PLOT 85,640,640
550 MOVE 480,512:PLOT 69,800,5
12:PLOT 85,640,384
560 PRINT TAB(6,10)CHR$226;TAB
(12,10)CHR$227;TAB(6,19)CHR$224)
TAB(12,19)CHR$225
570 ENDPROC
580 DEFPROCPLAY(B$)
590 B=ASC(B$)-135:VDU 19,B,7,0
600 SOUND 1,2,B*52+4,5
610 FOR J=1 TO 800:NEXT
620 VDU 19,B,B,0)
630 ENDPROC
640 DEF PROCinst
650 CLS:COLOUR 3:PRINT TAB(7,3
)"SIMON"
660 COLOUR 2:PRINT""Use the
cursor keys""to follow the tun
es""Played by simon the""
computer"
670 COLOUR 6:PRINT"" TO ST
ART PRESS"" ANY KEY"
680 COLOUR 7
690 G=GET:ENDPROC
700 MODE 7
710 *FX 4,0
720 END

```



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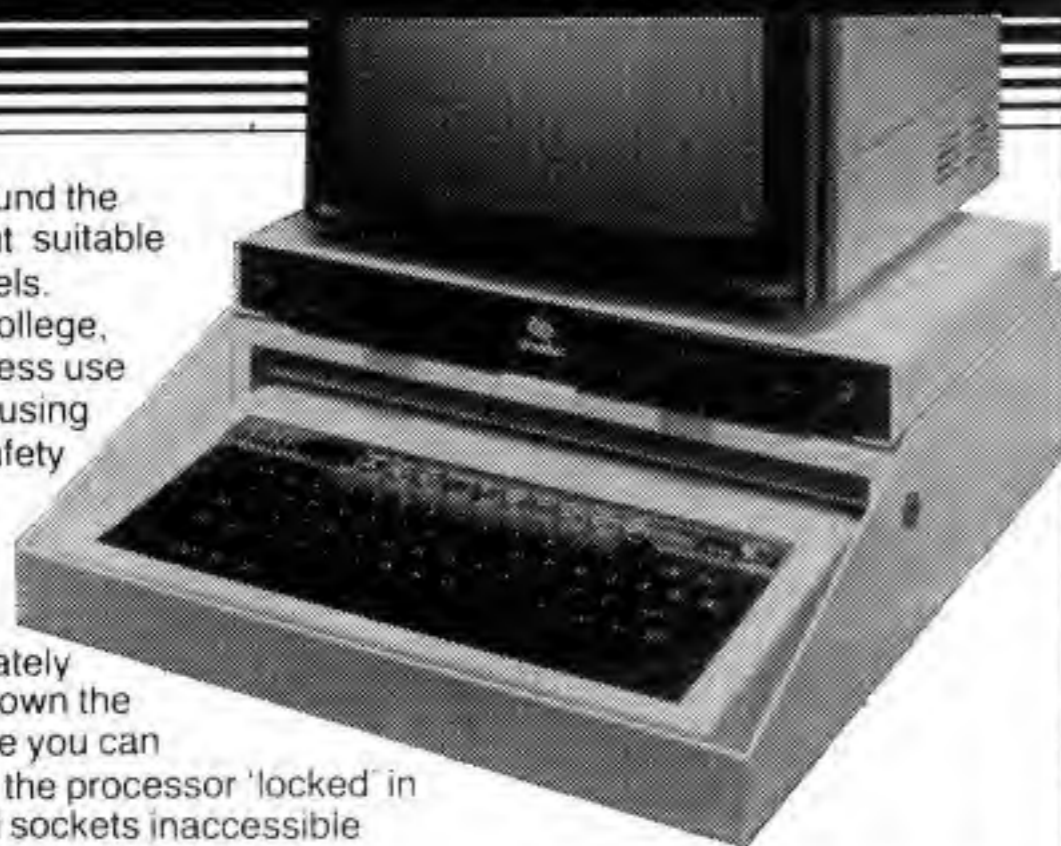
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